

AMERICAN BEE JOURNAL

Vol. LXX—No. 3

Hamilton, Illinois, March, 1930

Monthly, \$1.00 a Year

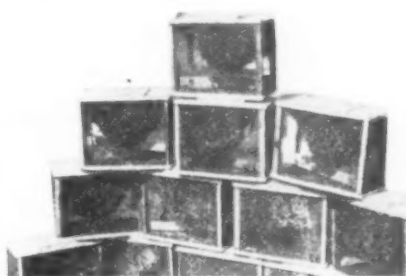
Package Bees for Manitoba

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THE production of honey through the use of bees purchased by the pound is becoming increasingly important in Manitoba. Although no actual data on the number of packages imported each year into Manitoba are available to the writer at this time, it is certain that many thousands are imported annually through the various ports of entry from the United States. These package bees are used for three distinct purposes: Packages are purchased to replace colonies which died during the winter, to increase the number of colonies in the apiary, and to strengthen colonies which are low in population in the early spring. Beekeepers all over the province purchase package bees. One beekeeper of my acquaintance purchased one hundred and eighty packages. Others purchase as few as one or two packages. There appears to be reason to believe that package bees will become more widely used as the years pass. Already many beekeepers are questioning the advisability of carrying their bees over the winter, and some are now destroying their bees in the fall, at the end of the nectar flow.

During the years 1926, 1927, 1928 and 1929, an attempt was made to compare yields from package and over-wintered colonies in Manitoba. Beekeepers who were known to have both package and over-wintered colonies were sent a printed form with the request that they fill in the data asked for and return the form at the end of the season. Certain of these were able to comply with this request, with the result shown in the tabulation table. (See table of "Yields from Package and Over-wintered Colonies.") These data indicate:

1. That over-wintered colonies produced on the average more honey each year than the package colonies.
2. That the two-pound package is



These packages arrived in reasonably good condition

to be preferred to the three-pound package.

3. That the packages received before May 1 produce more honey than those received on or after that date.

4. That the average date of receipt of package bees is gradually becoming earlier each year, which tends to lessen the spread between yields from packages and over-wintered colonies.



Feeding sugar syrup to a package on arrival in the northern apiary

5. That packages received before May 1 produced slightly more honey than over-wintered colonies.

In April, 1929, the writer undertook to find out exactly the trend of package bee arrivals at Winnipeg, as well as the condition of the bees upon arrival and the types of containers used. This compilation of facts was made possible only through the courtesy of the officials of the Railway Express Agency, Inc., who gave every facility for obtaining all the data desired. I wish at this time to express my sincere appreciation for their assistance. These data include neither postal arrivals, which were comparatively few, nor certain other shipments the data on which were not obtained. In all, 2,325 packages of bees were under observation from the first receipts on April 15 until the last arrivals reached their destination on June 15, 1929. These bees were shipped from Georgia, Alabama, Mississippi, Louisiana, Texas, and Arizona. One shipment came from California. Twenty-five shippers took part in supplying bees to this section of Manitoba. These bees arrived in one hundred and sixty-two distinct shipments. The graph shown indicates total weekly arrivals from the time the packages began to arrive until shipments were over. A week was used as a unit, since it was found that more bees arrived on some days of the week than on others, and any other unit of time, other than a daily one, would be misleading.

It will be seen that the peak of the season was reached during the first week of May. This corresponds with our average date of arrival of packages from 1929 shown already from another source. If our figures, which indicate that packages received before May 1 produce more honey than those received after May 1, are correct, it would seem that even in 1929 we are not receiving our package bees early enough. Of the 2,325

Yields from Package and Overwintered Colonies

	1926	1927	1928	1929	4-Year Average
Number of beekeepers sending data	25	23	30	28	26.5
Number of overwintered colonies owned	107	260	306	79	191
Average yield in pounds per overwintered colony	120	189	140	178	145
Number of package colonies owned	166	232	244	170	203
Average yield in pounds per package colony	77	166	99	130	120
Average yield of two-pound packages		185	100	142	142
Average yield of three-pound packages		162	140	103	135
Number of two-pound packages received before May 1		42	61	91	64
Average yield in pounds from these packages		215	107	148	149
Number of two-pound packages received after May 1		183	153	37	124
Average yield from these packages		159	97	99	127

Average date of receipt of packages for the year—1926, May 16; 1927, May 13, 1928, May 7; 1929, May 4.

packages received, 807 were received before May 1 and 1,518 were received on or after May 1. Certainly those who are getting their bees well along in May are not receiving them early enough for best results in Manitoba.

Considering total arrivals on each day of the week throughout the season, it was found that, beginning with the day of the greatest number of arrivals, the days stood as follows: Tuesday, Monday, Friday, Wednesday, Saturday, Sunday and Thursday. Nearly half of the packages arrived on Monday and Tuesday, which are good days for bees to arrive. Saturday and Sunday are the worst days, and shippers should bear this in mind when delivering bees to their receiving station. They should know the normal time it takes to deliver a shipment from their shipping point to each individual destination and govern themselves accordingly so that shipments will not arrive either on Saturday or Sunday. The express cars are less crowded on Saturdays and Sundays and packages of bees are better ventilated when traveling on those days. For best results, shippers should forward their bees toward the week-end, so that the bees will be enroute over Saturday, Sunday and Monday. Monday, Tuesday and Wednesday are the best days for bees to arrive at Customs.

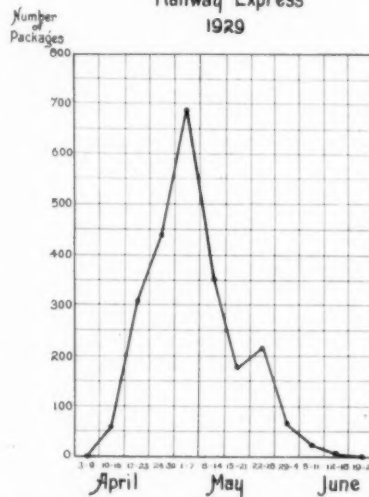
All shippers of bees must attach invoices to each shipment in addition to those mailed directly to the customer. It is advisable to make the invoices out in quadruplicate and attach two copies to each shipment and mail two copies directly to the customer. This will prevent undue delays should one set of invoices get lost in some way. To each package should be attached a pure food certificate, which is required by law. Some shippers place only one of these stickers on the whole shipment. It so happens that at times the shipment may become divided and one part arrive at one port of entry and another at another port of entry. The part of the shipment without the pure food certificate will then be held up. To avoid this possible delay, a pure food certificate should be placed on each individual package, and certainly upon each group of packages.

Our next consideration was the condition of the bees themselves. In

general the packages looked to contain full weight of bees. In some packages there were certainly fewer bees than in others. If the more populous ones were not overweight, then the lighter ones certainly were underweight, but obvious cases of this nature were few in number. We did wonder continuously what method various shippers adopted for measuring out two pounds of bees.

Considering the receipts of packages over the whole season, I was surprised at the uniformly good con-

Package Bee Arrivals at Winnipeg, Manitoba
by
Railway Express
1929



dition of the bees upon arrival. It is true that a few shipments contained dead bees entirely, while others contained many dead ones, but the majority had only a handful of dead bees in the bottom of the package. The larger shippers seem to be better informed than the smaller ones with respect to requirements for successful shipping and also regarding shipping regulations. One small shipper had placed a piece of honeycomb inside each cage. Of course, the shipment was returned to the shipper, no doubt much to his annoyance and certainly to the annoyance of the purchaser.

Most shipments had very few bees clinging to the outsides of the packages. In some cases, however, there were live bees crawling on the outside of the screen. This certainly denotes carelessness on the part of the shipper. These loose bees are very

annoying all along the route of travel. They are most undesirable when packages are being handled at their destination. Shippers should take care to see that filled packages are not left around to attract other bees. All bees that are traveling north should be inside the packages.

An estimate was made of the dead bees on each shipment upon arrival, by the express company officials. This loss average 3.7 per cent for the entire shipping season. The loss for each week averaged as follows:

April 10-16, 4.9 per cent; April 17-23, 3.6 per cent; April 24-30, 2.7 per cent; May 1-7, 1.7 per cent; * May 8-14, 7.2 per cent; May 15-21, 4.2 per cent; May 22-28, 4.6 per cent; May 29-June 4, 7.2 per cent; June 5-11, 3.2 per cent; June 12-18, 4 per cent.

As a general statement bees seemed to arrive in the best condition during the last week of April and the first week of May in 1929.

Many different shapes and sizes of containers or packages were used for shipping the live bees. The longest container measured, out of containers measured from forty-one distinct shipments, was 18 inches, and the shortest 11½ inches. The widest container was 6½ inches and the narrowest 4½ inches. The tallest container was 9½ inches and the lowest 7½ inches. More uniformity was shown in height than in other dimensions. No two shippers used the same size of container for bees. Each evidently has his own idea of the best type and has his containers built to those dimensions. There must be an approximate size of container which is best. Possibly some were too narrow and some too low. Certainly some were needlessly long. I doubt if any were too high, too wide or too short. Used containers from twenty different shippers were collected by the Department of Entomology by mail from importing beekeepers. These were placed inside a laboratory during the summer to dry out thoroughly. These were weighed on December 30, 1929. With each container was weighed an empty feed can and an empty queen cage. In some cases the thin board which is nailed over the top of the hole in the package to keep the feed can in place was gone, while it was still on the package in other cases. The heaviest empty package weighed 49½ ounces, while the lightest one weighed 29 ounces. The average weight of the twenty empty packages was 38 ounces.

The best size of package in our judgment was the lightest one, and

* This included a shipment of 25 colonies, 50 per cent dead. When this shipment is excluded the loss for the week was 3.9 per cent.

its lightness made it that much more satisfactory. No beekeeper wishes to pay express on excess weight in the container. A certain shipment of ten two-pound packages of bees which I received weighed 65 pounds when accepted by the express company. These happened to be in the light weight containers. Had these same bees been shipped in the heaviest package, the shipment would have weighed 12 pounds and 13 ounces more. Suppose the shipment had contained fifty or one hundred packages. Figure out the added cost to the northern beekeeper who pays the express charges. Some shippers nail four or five packages together with two pieces of board six or eight inches wide, while others fasten the packages together with laths, which are much lighter. Some shippers have wooden ends to their packages, while others have screen on the ends as well as the sides, which also reduces the weight of the empty package. The short, wide, tall package does not need much bracing to hold it rigid. Some shippers mortice the braces into the edges of the top and bottom of the package. This is entirely unnecessary. The usual type of wire screen used was twelve meshes to the inch, which was very satisfactory. Some used an unnecessarily expensive galvanized wire screen, while one used copper screen. The queen cages used in the packages were uniform in size. Shippers should always see that a flat piece of tin larger than the bottom of the feed can is soldered to the bottom of the can. This prevents the feed can from falling through into the center of the package below. Feed cans without such bottoms are very difficult to remove when the bees are to be liberated at the end of their journey. Good shippers brace the top of the feed can so it remains rigidly in place. Two or three very small holes in the top of the feed pail will let all the feed through that the bees will take. One or two shippers placed a piece of cloth under the lid before it was pushed on the pail. This stopped the feed from getting through and resulted in a shipment with half of the bees dead. One can had no hole in the top at all, with the result that the bees were all dead.

Records were kept on 156 individual shipments of bees from the states mentioned previously to see how long the bees were enroute. These records show that fifty-six shipments took three days to reach Winnipeg; seventy-five shipments took four days; eighteen shipments took five days; five shipments took six days; one shipment took seven days, and one shipment was eleven days enroute. It is interesting to note in this connection that this last shipment arrived in excellent condition.

This brings up the question of how much food should be placed in the feed pail. When the bees start on their journey they are usually accompanied by an amount of syrup approximately equal to their own weight. Is this too much? What is the minimum daily requirement of sugar syrup for two pounds of bees? This is a point upon which we have no information, apparently.

Conclusions

1. Most beekeepers in the Winnipeg area are not obtaining their bees early enough for best results.
2. Package bees when received before May 1 produce as much honey as over-wintered colonies. Package bees should, therefore, be ordered for delivery before May 1.
3. Packages containing two pounds of bees with queen are preferable to three-pound packages with queen. It is a waste of money to order the three-pound packages.
4. Package bee shippers should

not forward their shipments to reach their destinations either on Saturday or Sunday.

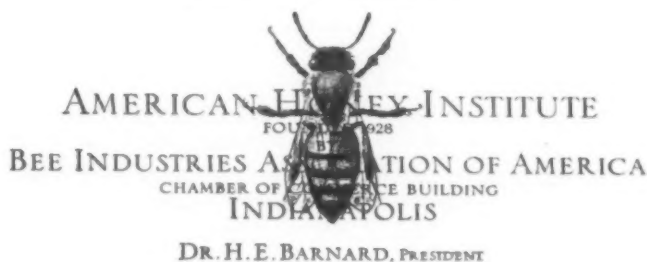
5. In the spring of 1929, package bees arrived in Winnipeg in good condition, with few exceptions.

6. Shippers should not forward packages with live bees clinging to the outside of the cage. These cause trouble to the transportation companies and also to the purchaser when he handles the package at its destination.

7. Packages of bees arriving in Winnipeg, 1929, during the last week of April and the first week of May appeared to contain the fewest dead bees.

8. There is no uniformity in the size and weight of containers used for shipping bees at the present time. Research on this is desirable. The lightest package, strong and roomy enough for the bees, is best. Some containers used at present are unnecessarily heavy.

9. Most shipments took three or four days enroute to reach Winnipeg.



Meeting of the American Honey Institute at Milwaukee on February 3

The second annual meeting of the American Honey Institute was held at Milwaukee February 3, following the meeting of the American Bee Industries Association. There were present many manufacturers of bee supplies, honey bottlers, honey jobbers, queen breeders, and beekeepers, as well as representatives of beekeepers' associations. More interest was shown in the work of the American Honey Institute than at any previous meeting and a better understanding of the work of the Institute was had by all those present.

Dr. Barnard gave a very complete report of the work which has been accomplished and which is now under way by the Institute. This was supplemented by Miss Fischer's report. Charts had been prepared by Miss Fischer showing the various kinds of work done. These charts were posted on the walls of the exhibit room and were of interest to those in attendance at the meeting of the American Honey Producers' League. (See report under "Meetings and Events.")

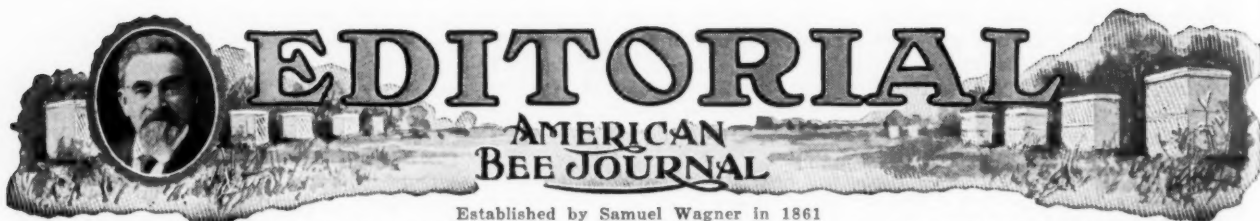
During the past year expenditures of the American Honey Institute have run between \$7,000.00 and

\$8,000.00, all of which has been or will be taken care of. The Institute is in excellent financial condition to finish the year's budget as outlined by the Board of Directors last February at Sioux City.

Although the work of the American Honey Institute is in its initial stages, the foundation has been thoroughly laid and, in order for it to accomplish the greatest good possible, it will be necessary, during the coming year, for those interested in beekeeping to rally to its support. The amount of work to be accomplished will depend on the support that the Institute receives from the hands of the honey producers themselves.

A committee was appointed to draft a membership plan whereby beekeepers all over the country could subscribe to the funds of the Institute. These plans have been practically completed and will be submitted in the American Bee Journal and other magazines in the early future. It might be said, however, that the plan of the Michigan State Beekeepers' Association of paying one dollar per ton of honey produced and the plan of the Wyoming State Beekeepers' Association of subscribing one-half of one per cent of

(Continued on page 146)



Established by Samuel Wagner in 1861
The oldest Bee Journal in the English language. Published monthly at Hamilton, Illinois. Copyright 1930 by C. P. Dadant

Entered as second-class matter at the Postoffice at Hamilton, Illinois.
C. P. Dadant, Editor; Frank C. Pellett and G. H. Cale, Associate Editors; Maurice G. Dadant, Business Manager.

SUBSCRIPTION RATES:

In the United States, Canada and Mexico, \$1.00 per year; three years, \$2.50. Other foreign countries, postage 25 cents extra per year. All subscriptions are stopped at expiration. Date of expiration is printed on wrapper.

Our Industry Making Real Progress

The meeting at Milwaukee, Wisconsin, on February 3, 4, 5, and 6, of the Bee Industries Association of America, the American Honey Institute, and the American Honey Producers' League shower that many of those most vitally interested in beekeeping realize the necessity of cooperation. At these meetings, not only were beekeepers represented from almost every state in the Union, but there were as well representatives of bee supply manufacturers, honey bottlers and jobbers, tin can and glass manufacturers, queen breeders, package bee shippers—in fact everyone interested in the industry.

The note of harmony between all of these different factions indicates that a realization of the necessity of acting together has finally dawned. When members of these organizations can all sit around the same table and discuss questions confronting the industry, that means real cooperation. When, for four consecutive days, the interest in these discussions and the desire to help solve the problems and work for the greater popularizing of honey did not lag, certainly there are great hopes of beekeeping being at last placed on a substantial footing.

The meetings were entirely free from bickering, red tape and unnecessary arguments and were instead conducted along the lines of constructive work. Without question, this augurs well for the future of our industry.

Contentment

In a recent issue of Rural New Yorker appears an article by a correspondent who is well known to the readers of this magazine also, O. B. Griffin, of Maine. In comparing his life as a farmer with that of wage earners in town, he outlines some homely philosophy. Among the comforts he mentioned:

"In the storage room near by hung a side of beef, and the shelves were well packed with canned fruits and vegetables which the foresight of our other half had provided for use in a season when fresh fruits were not available. More than enough wheat for the necessary flour supply was in the barn, with home-grown beans and other things. In addition there was much more than enough honey to keep us sweet for a year."

How much of security and contentment is apparent in the word picture which our friend paints. On his own farm, with no rent to pay, and with fuel and food laid

by sufficient for many months, what more could a man want?

In recent years, since the tendency of the farm is to follow the factory by producing one specialty in large volume and buying everything else in the market, we have departed from the old-time method of producing most of our supplies at home. While we may have gained in many ways from the change, we have also lost something of the old-time spirit of satisfaction and contentment.

The Corn Sugar Situation

During the past month the corn sugar people have been very active in an attempt to get the farm bureaus in various states and counties to pass resolutions supporting their Capper-Cole bill which would legalize the addition of corn sugar, without mention, to **all manufactured and prepared food products**. It is to be regretted that they have been successful in some instances. However, as soon as the beekeepers' organizations and publications got wind of their activity, everything possible has been done to counteract their efforts.

The New York State Farm Bureau not only failed to pass any resolution favoring the corn sugar bill, but passed one that directly condemned it. In Minnesota, Dr. Tanquary, President of the American Honey Producers' League, with others, appeared before the legislative committee of the Minnesota Farm Bureau and succeeded in having a resolution passed condemning the unmentioned use of corn sugar in foods as proposed by the corn sugar bill. This resolution was passed in spite of the fact that a resolution had already been presented urging the support of the corn sugar bill.

In Illinois, the American Bee Journal had a representative at the State Agricultural Association meeting at Springfield. This representative was in touch with the legislative committee to ascertain whether any such resolution would be submitted supporting the corn sugar bill. Whether it was because of the "licking" that the corn sugar people received in New York State and Minnesota or whether they already decided to change tactics, no such resolution was even presented or mentioned. President of the American Farm Bureau Federation, Sam Thompson, was interviewed and information given to him as to the danger to the farmers by the passage of the corn sugar bill as it stood at that time.

The Ohio State Farm Bureau Federation during the same week passed a resolution condemning the corn sugar bill and the use of corn sugar in prepared or manufactured foods without declaration on the labels.

As this is written, our Associate Editor, Frank C. Pellett, has been in Washington for some time in conference with officials to get all the information possible about the corn sugar bill. It has been found that the

Cole-Capper corn sugar bill, known as S-685 and HR-2154, has now been replaced by what is known as the Haugen Bill, HR-9760, which is a bill to "define fruit jams, fruit preserves, fruit jellies, and apple butter; to provide standards therefor and to amend the food and drug act of June 30, 1906 as amended."

The bill as first introduced to Congress was sponsored by the manufacturers of preserves in an attempt to standardize preserves, jams, and jellies. The friends of corn sugar have substituted a similar bill by the chairman of the committee, which would permit the use of corn sugar as well as other sugars in these products without labeling them as such.

Housewives have so far been unwilling to buy such articles when labeled "sweetened with glucose," but, should this bill pass, no such label will be necessary. Honey is not threatened directly, but it is feared it may prove an entering wedge which will lead to further modification of the pure food law.

This issue of the Bee Journal will reach our readers too late to notify them of the hearing on this bill before the House Committee on Agriculture, but we expect to have more information in our next number.

Beeswax and Comb Foundation

We see a great deal of discussion and disagreement upon the manufacture of comb foundation from pure beeswax and from adulterated or mixed wax. This discussion is carried on in Europe quite freely and some of the champions of foundation made from mixed waxes openly declare that it will be a benefit for the honey producers if they accept and use in their hives a mixture of different waxes, under the plea that the foundation thus supplied will be better and cheaper than that furnished by the makers of pure beeswax comb foundation. One of the supporters of the idea of getting a product made mainly of artificial mineral or vegetable waxes holds that there is a great deal of adulteration in the beeswax used in comb foundation anyhow, and that the honey producers might as well accept artificial products for this purpose.

It is asserted that beeswax is usually impure and that it contains a great deal of propolis. This is incorrect. Tests made by a capable chemist, Dr. Lloyd R. Watson, whose article appears in this number, show that it is not difficult to detect impurities and artificial waxes in comb foundation, by chemical experiments.

We wish to give emphasis to the following: It is to the interest of beekeepers to retain purity in their products, whether honey or beeswax, and anything in the direction of an addition of mineral or vegetable waxes to the pure product of the bees will damage the sale of the beekeepers' products and injure the interests of beekeeping. If comb foundation was retained in the hives without ever having to be rendered, there might be an excuse for the use of other waxes than that produced by the bees. But as it is, the addition of other waxes will be damaging to the interests of apiculture as would be the addition of corn sugar to honey.

Chickens Come Home to Roost

After all the appeals for higher and higher tariffs on goods coming into this country it seems a bit surprising to find the automobile manufacturers appealing to the Government to do something to stop the barriers that foreign countries are erecting against American goods.

America is now an exporting nation, and the only way that we can hope to continue operating our factories to capacity is by seeking markets abroad. If we set up high tariffs to shut out foreign goods, we must expect them to do likewise and shut out our products.

America produces more than she can use of most agricultural commodities, including honey. She likewise turns out more manufactured articles than can be used at home. Instead of agitation for higher tariffs, we

should bend our efforts toward trade expansion and the exchange of our surplus for articles which we do not produce at home.

In 1928 we exported honey to thirty-eight foreign countries and sold more than seven million dollars' worth to foreign customers. If these countries shut their doors against American honey, where will we find a market? Times have changed and the plan of action suited to conditions of a generation ago no longer serves the needs of our growing country.

How to Market Our Honey

A crop and market card coming in from one of our good reporters in New York brings forcibly to our attention perhaps one of the reasons why the Central West and the East are having more difficulty in disposing of their honey than are the larger producing areas.

This correspondent says in part: "As near as I can find out, most of the beekeepers have sold. I think it will be all cleaned up for our 1930 crop. Honey is extra fine is one reason. I never knew so many who wholesaled their crop as in 1929. Beekeepers should sell all they can locally or you will hear them 'holler' overproduction. People will buy honey if you take it to them who won't buy otherwise."

As stated elsewhere in our columns last month, it is our sincere belief that the time has not yet arrived where the big distributors of honey are able to cover every territory, all small towns, and all demands for honey. Furthermore, the demand will not come unless the impetus is given by the beekeeper, at least by suggestions.

I am reminded of this forcibly by the fact that a local maple syrup man met me on the street this morning and suggested that he was making maple syrup and would be glad to deliver a gallon to me. Maple syrup in the latter part of February was far from my thoughts, but the farmer got an order for a gallon. I wonder how many of our potential honey customers are passed by. Perhaps we cannot afford to confront everyone on the street, asking them if they have had their morning supply of honey, but we cannot afford to neglect that market.

What Others Think of Us

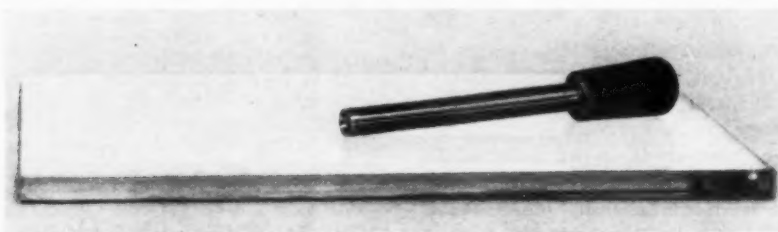
A letter just received from an English beekeeper, while giving praise to the American Bee Journal, complains that most of its space, about 85 per cent of it, is given over to "marketing, preparing for market, boosting sales, the use of honey as an ingredient in foods, honey institutes, conventions, and similar subjects." This to him is unsatisfactory.

It would be a mistake to deny this. But why do we do it? If a constant reader of the American Bee Journal will take up its past issues, back to its beginning in 1861, he will find that there was a constant variation in subjects, according to the existing requirements of the beekeepers. At first it was the fundamentals of honey production that were discussed, with recommendation of modern styles of hives, doing away with the old "gums"; later, the production of better bees, with the subject of importations of foreign races; then the prevention of swarming; methods of wintering bees safely; discussions of the best methods of queen-rearing; still later our beekeepers came to the study of diseases and numerous other things which constituted problems of importance.

Nowadays, although we still discuss the problems of honey production at the least possible cost, we find ourselves sufficiently advanced in the rearing of bees to be sometimes embarrassed in the sale of honey at adequately remunerative prices. We have evidently gained a great deal in the solutions of the problems of honey production. What we need most now is the solution of the problem of selling at sufficiently remunerative prices.

That we are likely to solve that problem also is not to be doubted. It will take some time; the beekeepers will discuss on all sides the best methods to reach this end. But there will be a solution, and this solution most likely is to be found in cooperation.

With this sampling tool small amounts of wax are molded for testing with this new method



The Detection of Carnauba Wax in Beeswax

By Dr. Lloyd R. Watson

BEESWAX is not a single chemical compound, but it is a mixture of several chemical compounds, each of which possesses its own individual physical and chemical properties. For this reason the melting point and the density, as well as all the other physical constants of pure beeswax, are not sharp, definite values, but vary between rather wide limits. In the identification of pure chemical compounds in the laboratory, use is generally made of such physical properties as melting and boiling points, density, refractive index, viscosity, and the like, but the identification of pure beeswax by these characters is a difficult task, especially because the ordinary adulterants of beeswax, such as tallow, paraffin, ceresin, and vegetable waxes themselves, possess properties so similar to those of beeswax. A short, simple, dependable method for the identification of pure beeswax, suitable for the routine work of the chemical laboratory, and not too exacting in apparatus requirements and in manual technique, has unfortunately been lacking up to the present time. Only gross adulterations can be detected by superficial examination, and the determination of moderate adulterations can usually be made only after long, technical, and more or less unsatisfactory analytical procedure. It must not be assumed that the study of the chemistry of beeswax, has been neglected by skilled organic analysts. The fact is that intensive investigations have from time to time been made by scientific workers in many of the leading countries.

Wide Search Has Been Made for a Simple Method

The present account constitutes a brief preliminary report of investigations which began in 1920 to detect adulterations in beeswax without recourse to the usual involved procedure of determining melting point, specific gravity, acid index, ester number, saponification index, ratio number, and the like.

Spectroscopic analysis revealed no

noticeable and dependable differences between pure beeswax and its mixture with certain related organic compounds. Exhaustive studies were then made of the refractive indices of pure beeswax and of its various commoner adulterants. Although gross adulterations of carnauba wax, paraffin and tallow could be easily detected, refractive index alone was found to be inadequate for discovering the presence of these substitutes when present in quantities much less than two per cent. This conclusion is essentially in harmony with that of Feldstein. (1)

The viscosity of beeswax and of the other waxes and fats most frequently associated with it were next investigated with the aid of a modification of the Oswald viscosimeter designed by the present author especially for these substances. Thou-

sands of determinations of relative viscosity made under carefully controlled conditions upon samples collected from all over the United States led to the conclusion that although for the detection of substitutes in beeswax the relative viscosity number is probably a little more sensitive than the refractive index, yet neither of these tests is of sufficient sensitivity to enable the certain discovery of adulterations much below two per cent.

Crystallography of Waxes Brings New Light

Investigations were next directed to the crystallographic behavior of beeswax and of its ordinary adulterants. Two years of experimentation have resulted in the development of a technique whereby carnauba wax can be quickly and easily detected in beeswax in mixtures as low as 0.3 per cent, and with slightly less certainty as low as 0.2 per cent, or sometimes a little lower. In the following paragraphs it is shown briefly how this may be done by any person who has a working knowledge of laboratory technique and who knows how to use the microscope.

The procedure about to be described is based upon the principle that every chemical compound possesses its own crystal habit. By this is meant that when a substance crystallizes from a given solvent it does so in a certain, characteristic crystal form, depending, among other things, upon the concentration of the substances in the solvent and upon the temperature. When a mixture of two or more compounds crystallizes from the solvent at the same time, each compound may come out in its own individual crystal form unaffected by any other compound, or, what is more likely, especially in the case of compounds very much alike, each compound may influence the crystal forming behavior of the other so that entirely different crystals may result than would have been observed had there been but one compound present.

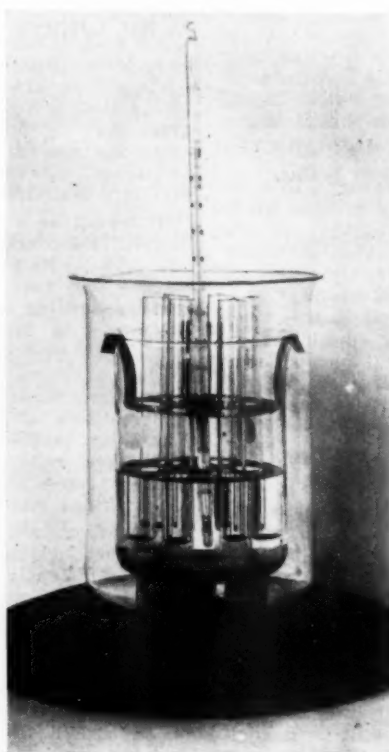


Fig. 2—Beakers, tubes, and thermometer, arranged for crystallization of beeswax

1. Feldstein, L., 1911. The Refractive Index of Beeswax. U. S. Dept. Agr., Bureau of Chem., Circular No. 86, 3 pp.

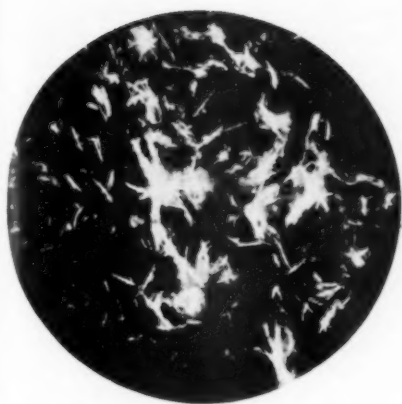


Fig. 3—Pure beeswax, fleecy flakes and thin linear shafts and bars

As already suggested, beeswax is a mixture of several compounds (2); furthermore, these compounds vary quantitatively in beeswaxes from different sources. Carnauba wax, likewise, is a mixture of several chemical compounds (3). From these facts it is to be expected that there will be some variation in the crystal habit of pure beeswax, even in the same solvent and under standardized conditions. Again, a given substance may dissolve easily in one solvent, but may do so only with difficulty, or not at all, in some other solvent. Just so the various constituents of pure natural beeswax display a differential solubility in almost any solvent. If a solvent could be found which would completely dissolve beeswax while leaving paraffin, for example, unaffected, or vice versa, a quantitative separation of these substances would be realized, but so simple a procedure has not yet been found.

The use of crystallography as a means of determining whether a given specimen is pure beeswax or not was inspired by the belief that

2. Cerotic and palmitic acids, and ceryl, neoceryl and myricyl alcohols, and myricyl palmitate. Grun, Adolf, 1929. *Analyse der Fette und Wachse*, Berlin.

3. Carnaubic acid, myricyl and ceryl alcohols, and myricyl palmitate. Grun, Adolf, same as above.



Fig. 4—Four-tenths per cent carnauba modifies the wax crystals. They draw together more compactly, with brighter, more solid centers.

probably a solvent could somewhere be found in which any genuine beeswax would behave so differently from any of its sophistications that at least a qualitative estimation could be made. A record of all the solvents that were tested for this purpose will be omitted here. The important consideration in the present report is that while studying the crystallographic behavior of beeswax in the presence of numerous frequently associated, but really exotic substances, in a wide range of organic solvents, the fact was alighted upon that an almost infinitesimal amount of the vegetable exudate called carnauba wax so profoundly modifies the behavior of beeswax in crystallizing that its presence may be detected with ease when normal butyl alcohol is the solvent. Furthermore, the experiment becomes quantitative when standardized procedure is used.

The Technique

A measured amount of the wax to be tested is obtained by use of a sampling rod (Fig. 1). This is a small bar of steel with a shallow depression hollowed out of the end of such a volume as to hold a pellet of wax weighing about 85 milligrams.



Fig. 5—Five-tenths per cent carnauba becomes areas of relatively few large, clear, brightly lighted burrs.

The end of the sampling rod, well lubricated with glycerol, is filled by pressing it down on a tiny bead of the wax on a glass plate lightly moistened with the same lubricant. The pellet of wax is lifted from the mould with the point of a needle and dropped into a clean test tube. Standard thick-walled ignition tubes 150 mm. by 16 mm. are preferred, because their weight better enables them to stand in water without floating.

In order that six determinations may be made at once, an 800 cc. beaker is fitted with a rack consisting of a circular disk of sheet metal perforated with six holes at equal distances in a circle near its outer edge to receive six test tubes, and one hole in the middle to receive a cork which holds a chemical thermometer (Fig. 2.). In the bottom of the beaker lies a disk of hard black rubber provided with a slight depression for each test tube to stand in. This rubber disk serves the double purpose of keeping the bottom ends of the test tubes in place and of preventing troublesome reflections later on.

Into six clean, dry, numbered test tubes, each containing its pellet of wax, is allowed to flow exactly 2 cc. of normal butyl alcohol from a burette. The wax in the test tubes is

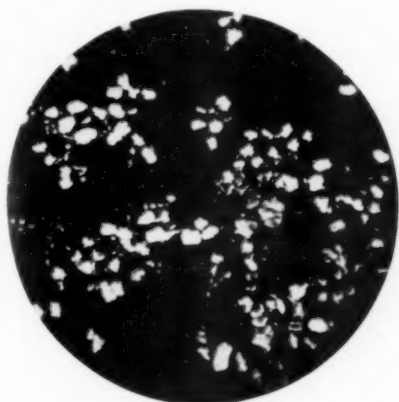


Fig. 6—One per cent carnauba shows a field of bright burrs, interspersed with tiny stars.

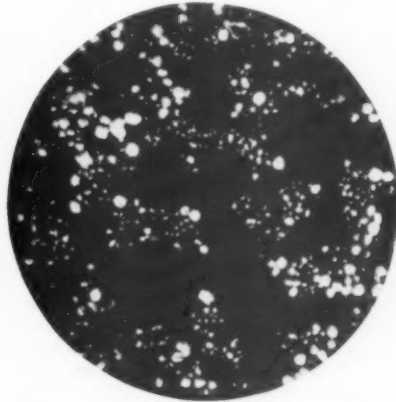


Fig. 7—In two per cent mixtures, the burrs and stars are increased in number considerably.

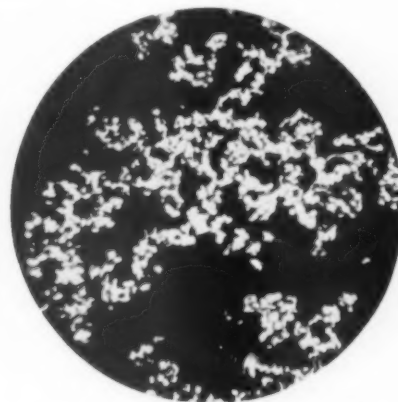


Fig. 8—When five per cent carnauba is present, innumerable smaller and extremely brilliant crystals dominate the field.

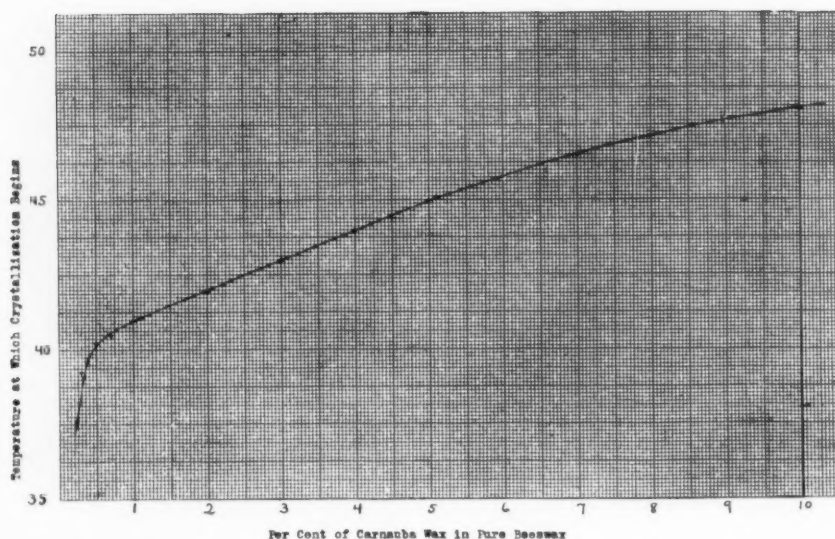


Fig. 9. Table showing relation of per cent of carnauba to temperature at which crystals form

now brought into solution in the alcohol by holding the lower ends of the tubes in boiling water. Only an inch or two of the lower end of the tubes is heated. The upper part is kept cool so that any of the solvent that is volatilized will be recondensed before reaching the top, thus preventing loss of some of the solvent. The tubes are conveniently handled two at a time, one in each hand, and careful watch is kept of the progress of the dissolving. After a little experience a cue may sometimes be obtained as to the nature of the unknown wax by the ease with which it dissolves. It is advisable to shake the tubes carefully from time to time as the wax dissolves, and to hold them between the eye and some good source of light to insure that the solution is clear and perfectly homogeneous. As fast as the tubes are thus prepared they are placed in the rack in the beaker in 300 cc. of water which should have a temperature of 55 to 60 degrees C. as the last of the tubes are set in.

The requirements of the experiment are that the temperature of the solution in the test tubes shall now be allowed to sink from about 55 degrees to room temperature in the course of about two hours. The purpose of this is to allow ample time for the wax crystals to grow. Too rapid cooling, so-called chilling of the solution, invariably results in the production of a crop of small, deformed crystals. In order to control better the rate of cooling, and especially to guard against the fluctuating effects of air currents in the room, the beaker containing the test tubes standing in water is now lowered bodily into a two-liter beaker and made to stand on three corks as pedestals. With this insulation the temperature of the water around the test tubes as indicated on the thermometer will sink at the rate

of two degrees every five minutes for the first half hour, and about one degree every five minutes for the next half hour.

As the solutions in the test tubes cool, the point is finally reached when crystals of wax begin to form. The temperature at which the very first visible sign of this change occurs is of critical analytical importance and should be carefully recorded for each sample. Under the conditions above specified, it is characteristic of pure beeswax to begin to crystallize not higher than 40 degrees nor lower than 36 degrees C. In general, admixtures of tallow or of paraffin, or of both together, do not appreciably change the temperature at which crystals begin to form, but an admixture of carnauba wax, even in the presence of tallow or of paraffin, or both together in the same solution, raises the temperature at which crystallization begins. In general, the more carnauba wax there is in the mixture the higher will be the temperature at which crystals begin to form. The property of carnauba wax of hastening the beginning of crystallizing possesses a quantitative relationship when every operation in the experiment is strictly standardized. This function is graphically expressed in the diagram (Fig. 9).

The superficial appearance of the contents of the test tubes as crystallization begins, and as it proceeds, also possesses great diagnostic value. Pure, clean beeswax forms relatively large, loose, glistening flakes and plates which flocculate loosely in the mother liquor and, during the first twelve hours at least, do not show much tendency to settle closely at the bottom of the solution. After a longer time they may settle so as to occupy only about one-half of the solution, leaving the supernatant liquid perfectly clear. In con-

trast to this the crystals formed from mixtures of beeswax and carnauba wax are relatively so small and so much more numerous that they give the solution a turbid, cloudy, or even milky appearance, with little or no suggestion of flocculency. After a few minutes they settle more or less closely at the bottom, leaving the upper liquid still cloudy and the inside wall of the test tube frosty as high up as the solution stands.

The final and confirmatory test, however, for the presence of carnauba wax lies in the microscopic examination of the crystals under 200 diameters of magnification with the aid of dark field illumination.

Appearance of Beeswax Crystals

Crystals formed from pure, clean beeswax appear characteristically either as thin, linear shafts and bars which usually, though not always, radiate from some point as a nucleus, or they may have the appearance of flat or of concave flakes, or plates. Beeswax crystals are highly transparent, and are difficultly visible microscopically by ordinary transmitted light. In addition to the above crystals, dark field illumination renders beautifully visible also much fleecy and downy material of pearly white appearance (Fig. 3).

The Crystal Habit of Beeswax May Be Profoundly Changed

Carnauba wax possesses the unique ability completely to inhibit the growth in normal butyl alcohol of the large, dendritic, sprawling figures, and of the pearly, cumulous masses of fleecy material which form the background of every freshly crystallized sample of pure, clean beeswax. Instead of the general microscopic picture of wax being deposited in the form of a relatively few large crystals, we see the wax coming out in the form of innumerable tiny stars, or spherulites, and concentrations of carnauba wax as low as 0.5 per cent completely effect this change. When 0.4 per cent of carnauba is present the change is not so complete. When only 0.3 per cent is present the change is still less complete, but nevertheless noticeable, and with a little practice it is usually possible to sort out samples of beeswax that contain 0.25 per cent of carnauba wax.

Size of Crystals a Quantative Function

It must be noted that the number and the size of the crystals vary with the concentration of carnauba wax, the number of the crystals varying directly with the carnauba present in the mixture, and the size varying indirectly. When about twelve hours old, beeswax carnauba crystals show about the following dimensions:

Per cent of carnauba	10	5	1	0.5
Average diameter of crystals in mm.	0.1	0.2	0.4	1.0

(Continued on page 146)

Beekeepers and Almond Growers Pool Their Interests

By R. B. McCain

A REPRESENTATIVE gathering of California beekeepers met at the headquarters of the California Almond Growers' Exchange at Sacramento, February 1, to confer with the officers of the Exchange in regard to the pooling of honey. This meeting was called by the officers of the California State Beekeepers' Association and was held under the auspices of that organization. There were about fifty honey producers present. Owing to the distance necessary to travel in order to reach this meeting, most of those present were from the northern part of the state. As this was to be expected, tentative plans had already been made to hold other meetings in the central and southern parts of the state.

The entire day was given to the discussion of the proposition of the Almond Exchange to place its facilities and sales organization at the disposal of the honey producers for the purpose of pooling, packing and marketing honey. Mr. T. C. Tucker, manager of the Exchange, stated that the packing and marketing of almonds is a highly seasonal business and that the expensive plant and sales organization are comparatively idle for a good portion of the year. The maintenance of this equipment and sales organization is an expensive proposition. The Exchange has looked for other agricultural crops, besides almonds, which could be packed and marketed to the profit of both the producer and the Exchange, and had decided to offer the opportunity to the beekeepers of the state. In order to use the plant and equipment without violating any of the legal provisions of the Almond Exchange charter, the Packing and Marketing Incorporation was organized and is now ready to do business. The management of the Packing and Marketing Incorporation heads up in the Almond Exchange. The beekeepers will have an opportunity to



The main building of the California Almond Growers' Exchange, Sacramento, Cal. Warehouse in the rear does not show. Plant and equipment represents a million-dollar investment.

take stock in the corporation if they wish to do so, but this is not obligatory upon those who enter the honey pool.

After thorough discussion, the beekeepers present decided unanimously to enter the honey pool, with one thousand tons as the minimum amount of honey with which to begin operations. As nearly that much was reported as the normal amount of yearly production of those present at the Sacramento meeting, there seems little doubt that the pool will be organized for the 1930 crop of honey.

The California Almond Growers' Exchange is one of the very few successful cooperatives in the United States and has been in operation for about twenty years. The buildings and equipment, which represent a

value of over \$1,000,000 are all paid for and are the property of the Almond Growers. There is no debt of any kind on this property. This valuable property and complete organization will be used by Packing and Marketing Inc. for the processing and marketing of honey at actual cost of the work to the honey producers who enter the pool. It is a purely cooperative enterprise.

The machinery used in packing almonds is unique in character and complete in every detail. Most of this machinery was designed especially to meet the needs of the almond growers in processing and packing their products. It may be truthfully said that there is no other plant like the Almond Exchange factory anywhere in the world. A tour through the factory is a revelation of order, efficiency, and cleanliness. Mr. D. R. Bailey, superintendent of the plant, designed most of the special machinery and takes great pride in the perfection and orderly cleanliness of the work in his plant.

An outstanding fact in connection with this movement for the cooperative packing and marketing of honey is the thoroughness with which both Mr. Tucker and Mr. Bailey are taking up the work. With a background of twenty years' experience in packing and marketing almonds, they are going thoroughly into the subject of bees and honey in order to find and master the underlying principles of that business. They have the best and most reliable books and bee journals at hand and are continually asking intelligent questions of beekeepers whom they chance to meet. Their files show extended correspondence with manufacturers and marketing agencies that are interested in honey, all over the world. They have set out to learn everything that can be learned from the ground up, and it is surprising to see the amount of infor-

(Continued on page 146)



Conference of California beekeepers with the officers of the Exchange discussing the plans for a honey pool



Sterilizers on the roof of the Exchange at Sacramento



Dean H. L. Walster, of North Dakota Agricultural College, whose dream of sweet clover for North Dakota farmers has made beekeeping possible.

Beekeeping in the Land of the Scots

A Summary of Present Conditions in North Dakota and a Tribute to Her Leaders

By J. H. Beatty and G. H. Cale

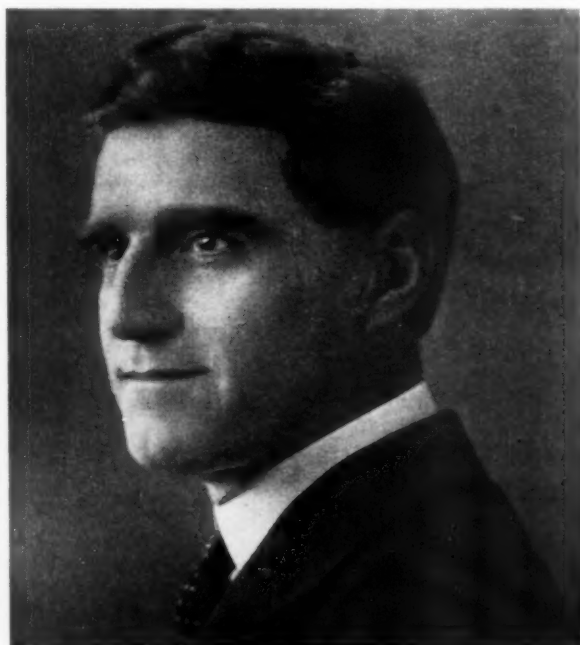
IN writing for the American Bee Journal in 1929, Fred Underwood states: "Beekeeping has reached a state of dignity in North Dakota beyond my comprehension. Statistics show that it is seventh among the states in honey production. To us old-timers, we wonder how such things can be. We think of the days when, on the wide rolling prairies of the northland reaching from the wheat country of the Red River northwest to the ranges, the country of the buffalo, and on through the western mountains, probably not one colony of bees existed."

Frank Pellett, in the American Bee Journal for 1926, remarks: "Nowhere else has there been such a remarkable change in such a short time as in North Dakota. From the poorest state it has become one of the best in a period of a few years."

According to the census of 1910, there were 495 colonies of bees in North Dakota. In 1921 there were 708. The report of the Commissioner for 1923 gives a total of 1353 colonies. In 1929, Governor George S. Shafer, writing in the Denver Post, said: "The number of colonies in North Dakota had increased to 30,000 in 1928, with a production of 3,300,000 pounds of honey. Acres and acres of sweet clover; long, warm, sunshiny days, and short, cool nights make ideal nectar-producing conditions, the long days giving many hours of work and the cool nights bringing down a large quantity of nectar in the blossoms."

According to a survey by J. A. Munro, the average honey production for 1929 was 133.2 pounds honey, 23 pounds higher than in 1928. Reports for the Red River Valley for the same season show an average of approximately 175 pounds. Occasionally one hears of a big yield

of 300 pounds or more average per colony, but this is an exception and such outlandish figures have given undue



Hon. Joseph A. Kitchen, Commissioner of Agriculture and Labor at Bismarck, one of the first beekeepers in the state and an active leader in the industry.

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W. W. Remmington, President of the State Association, in 1928, called attention to the fact that there were at that time about a half million acres of sweet clover in North Dakota, increasing about 10 per cent each year. The problems of marketing, transportation, and warehousing were becoming more acute because beekeepers were producing larger quantities of honey.

Beekeeping Results from Change in Agriculture

All of this change in the beekeeping of the state resulted from changes in agricultural practices. North Dakota has progressed from major wheat growing to diversified farming, and, in the program of agriculture, sweet clover is a soil builder and a pasture crop.

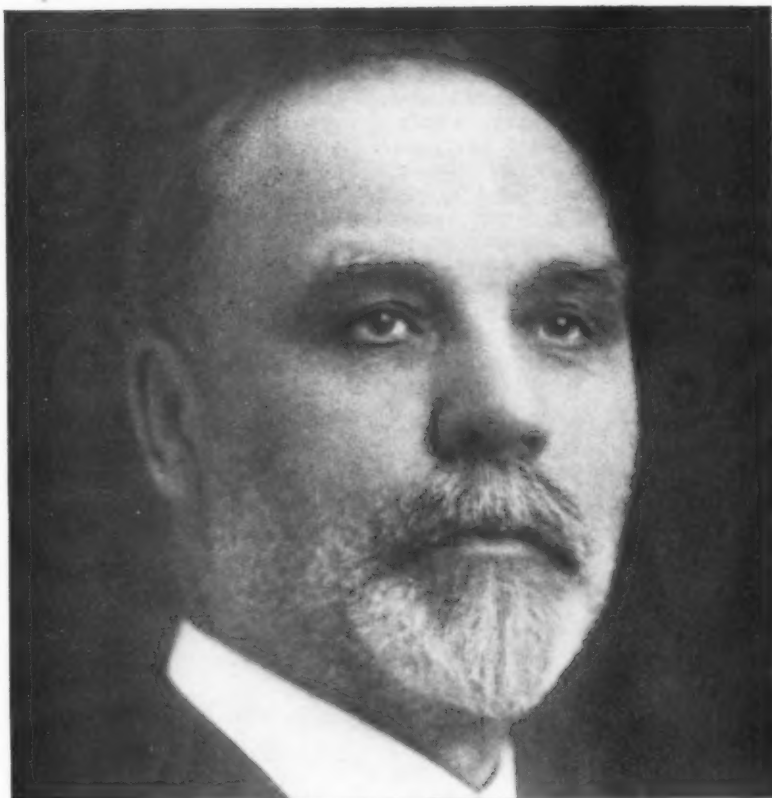
The soils of the state are ideal for both the stand and growth of this plant. North Dakota lies chiefly within the Mississippi basin. The eastern part consists of a low, level plain seventeen miles broad, constituting the Red River Valley, merging into a glaciated plateau with a broad elevation extending in a general northwest direction and covering the greater part of the state. The surface is billowy from the debris left by glaciers.

In the west, this region is succeeded by residual prairie, broken in the southwest by a small tract of bad lands and in the north by groups of hills.

The soils are therefore full of lime. Although the precipitation is light over the entire state, rains for the most part fall during the growing season of sweet clover, when they are of the most value. Summer comes late; winter comes early, giving a short, quick season, with the bees active from beginning to end.

Honey Plants

The cultivated honey plants are limited to sweet clover and alfalfa.



Professor J. H. Shepperd, whose pasture experiments have led to the permanency which is rapidly typifying sweet clover in the crop rotations of the state

Ten years ago sweet clover was a weed to be gotten rid of in the quickest way. Today dairymen, stock feeders, farmers, seedsmen and bee-

keepers are all interested in it.

Those who are in the best position to know say that sweet clover has come to North Dakota to stay, but



Above: No wonder the Scottish Highlanders looked with favor on the land of the Dakotas. It is not high land, but it is pleasant.

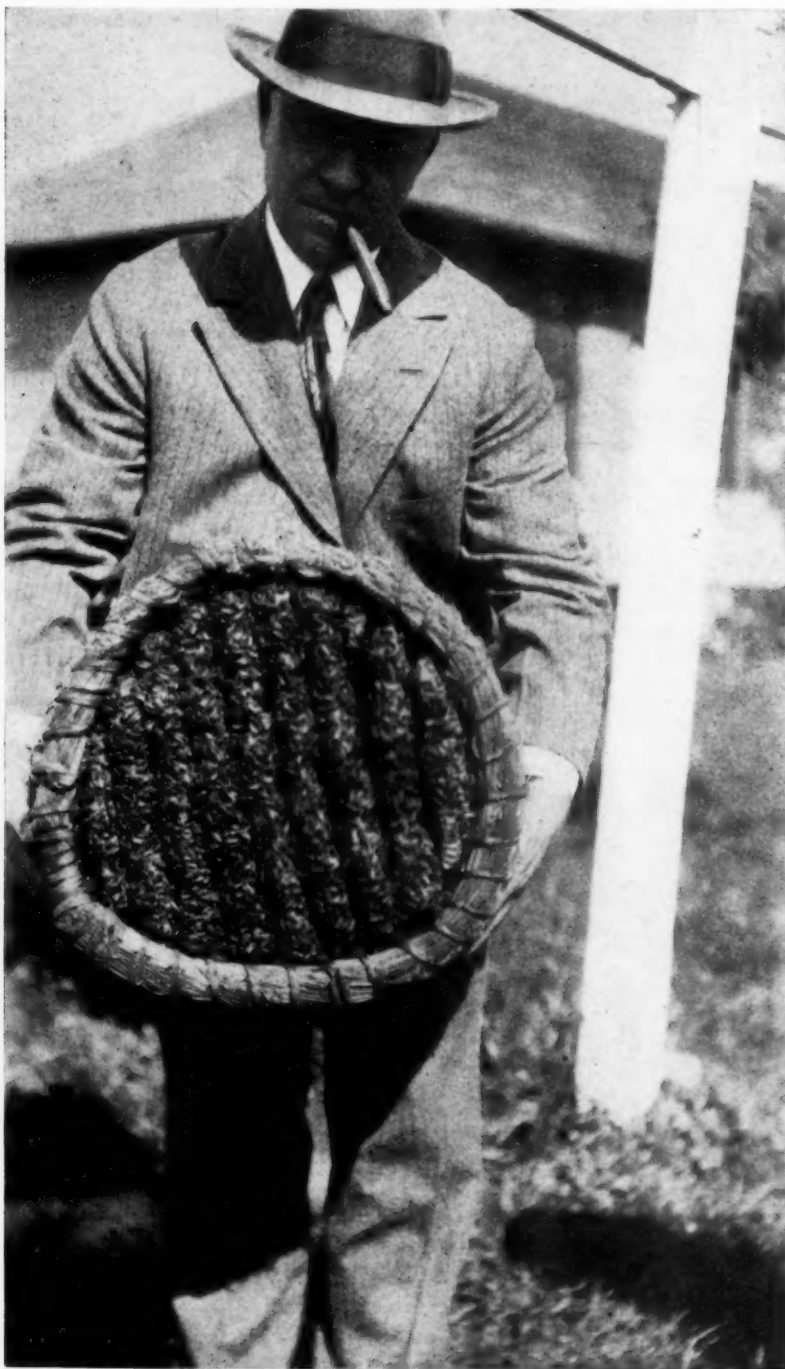
Below: Farmers gather in North Dakota to learn what sweet clover will do for cows and pasture.



there are enough farmers who have tried it and given it up to make it evident that there is bound to be a great deal of shifting in acreage. In a section where sweet clover is abundant this year, there may be only a small number of fields next year. Until very recently sweet clover was considered a noxious weed by most farmers. In fact, it is not unusual still to hear a farmer say he will never let a stock of sweet clover grow on his place if he can help it.

It is a plant ideally suited to so

many things, however, that it is bound to continue. Where soils are wet, sweet clover is a fine help in letting the moisture down because of the extensive root system which opens up the soil. Some say a one-year growth of sweet clover is as good as a three-year growth of alfalfa. It makes the finest kind of pasture, which is important, as natural grasses are very scant. The soil, though relatively new, has been grained heavily and sweet clover quickly increases the crop average.



Dr. M. C. Tanquary, formerly Entomologist in Texas and a member of the McMillan Arctic Expedition to Crocker Land, turned beekeeper in North Dakota with a thousand colonies. He is also head of the beekeeping work in the University of Minnesota.

The soil is also sufficiently sweet, so thorough seeding insures a good stand. In the western part of the state, alfalfa is of considerable importance, also.

Other Honey Plants

Prof. O. A. Stevens (American Bee Journal, May, 1925), discussing the native honey plants of the state, gives the buffalo berry among the first, blooming about the twentieth of April, followed by the box elder about April 27. Willows are common, especially along the Missouri River, giving a succession of bloom from April 23 to the latter part of May. Basswood follows about June 15 along the larger streams.

Wolfberry, or buckbrush, in the woods and thickets of the east is visited freely during July, and the dandelion, so abundant in the Red River Valley, flowering about the first of May and continuing till the first part of June, gives colonies a substantial boost. Sow thistle and Canada thistle are also important in places.

Professor Stevens also gives mustard, goldenrod and asters as important. None of these plants, however, are of sufficient distribution to insure beekeeping, and the permanence of the industry is dependent practically altogether on the continuance of sweet clover in the farming practice of the state.

J. A. Munro, in writing of the nectar sources, says: "Beginning about the twenty-sixth of June, the yellow sweet clover is blooming in sufficient abundance to make a marked increase in the amount of nectar. From this time on till the last of August, or sometimes till the fifteenth of September, the several varieties of sweet clover continue to yield. In addition to sweet clover, alfalfa and basswood contribute to some extent in the summer."

In writing of conditions in his experience in the state, Roy A. Grout, formerly with C. S. Engle at Fargo, North Dakota, says: "Apiaries in North Dakota are located usually near a good source of water, in a sheltered place, averaging about a hundred colonies to the yard. Extracted honey is the general type of production. I saw but one apiary producing comb honey. Very little bulk comb honey is produced. Shipping facilities are good, as Fargo is located on two main railroad lines running east and west. Wintering is in cellars or caves and is very successful, due to stability in climate and lack of humidity."

Bees have been kept in the state long enough to make it appear safe to say that the average returns are equal if not better than those obtained anywhere else in America. There are still unoccupied locations,

especially in the western counties. In neighborhoods where live stock and dairying are important and sweet clover is abundant, the stability of the location is more certain.

Large Beekeepers Prevail

North Dakota has developed a different type of beekeeper than the states to the east or south, allied more closely with the large producers of the west. They seem to be typical of all the sweet clover country. It is interesting to meet them.

I can well remember standing on the edge of a tremendous field with a speck in the distance which I was told represented a man on a tractor. After waiting half an hour, Mark Andrews, one of the largest physical specimens of beekeeping manhood I have ever seen, climbed off of his machine to talk with me concerning his three- or four-hundred colony venture that had become a paying part of the farm system. Mark Andrews with his brother at Mapleton are outstanding in the beekeeping of the state.

At Amenia, North Dakota, the Smith brothers were the first to see in the combination of sweet clover and beekeeping an ideal farm project. In the initial stages of beekeeping they turned practically the whole of their farm, comprising several thousand acres, into a bee and clover ranch, clipping the sweet clover in blocks during the blooming period to make the honeyflow last longer and keep the bees busy all summer. Ralph Smith, previously Director of the Mountain States Honey Producers' Association for North Dakota, has this year been made President of that organization.

We would like to pay particular tribute to W. W. Remington, of Fargo, who for so many years was the popular President of the State Association. He has been recently succeeded by Charles Hausmann, a commercial beekeeper at Hillsboro and one of the well-known men. During his years of active service, Mr. Remington was looked upon by all beekeepers with great respect for his service, and he deserves a prominent place in the history of beekeeping in the state.

It is natural for beekeepers of other states to be attracted by the rosy pictures of possibilities in this northern country. It is not easy, however, to become adapted to the peculiarities of the region and to find a location permanently successful. Such men as C. S. Engle and J. D. Beals from Iowa; W. O. Victor and Dr. M. C. Tanquary, from Texas, have been drawn to the ranks of these northern beekeepers and have attracted attention to their efforts. A list of those conspicuous in the state would occupy too much space

here. They are a fine group of people worth cultivating.

North Dakota Beekeepers' Association

The North Dakota Beekeepers' Association has been one of the most active in the country, getting behind every movement in the industry. In 1923 the Association secured the passage of a law providing that no bees shall be shipped into the state on combs or used equipment. Live bees in cages are permitted.

In 1928, members of the Association joined the Mountain States Honey Producers' Cooperative Asso-

ciation, and during the last year at least 900,000 pounds of honey were marketed through this channel. The Cooperative is at present represented in the state by twenty-two members with a total of 6,000 colonies.

Inspection

Inspection work in North Dakota is under the Commissioner of Agriculture, Hon. Joseph A. Kitchen, located at Bismark. Commissioner Kitchen has recognized beekeeping as one of the main agricultural pursuits of the state. He was one of the first beekeepers of North Dakota with bees in the western part, and he has given the industry every sup-



The same straw skep that Tanquary holds. This is Professor J. A. Munro, State Entomologist and in charge of beekeeping and inspection in North Dakota. (Both were interested in the unusually good skep and not in the picture of themselves.)

port and encouragement. He is prominent in all the activities of the Association and is active in leadership of various kinds which give strength to the industry.

Prof. J. A. Munro, who succeeded Dr. R. L. Webster as State Entomologist, in charge of beekeeping and inspection work, has proved to be a sympathetic and able leader. He is also Secretary of the State Association and prominent in the affairs of the American Honey Producers' League. He is the key man in the state, but too modest to let us say much about him.

Two Great Leaders

Since beekeeping could not have been profitable in North Dakota without sweet clover, it follows that the pioneers who broke down the prejudice against it and have proven its possibilities are the men who set the pace for beekeeping. Even though the development of the honey industry came entirely as a side product of these pioneers, beekeeping nevertheless owes them a debt of gratitude.

I want to give recognition to two men at least who have, in a great measure, been responsible for the present popularity of sweet clover in North Dakota: Prof. J. H. Shepperd, chairman of the Animal Husbandry Department of the North Dakota Agricultural College, and Dr. H. L. Walster, dean of the School of Agriculture. Both have written many articles and given many addresses on the virtue of sweet clover and have taken an active part in the beekeeping program of the state.

Professor Shepperd, a graduate of Iowa Agricultural College and the



J. H. Beatty, senior, author of this story and also one of the state's leaders in beekeeping.

University of Wisconsin, spent a year on the editorial staff of the Orange Judd Farmer and was then successively Professor of Agriculture and Agriculturist of the Experiment Station, Dean of Agriculture, and Vice-Director and Chairman of the Animal Husbandry Department at North Dakota State College.

Professor Shepperd has always had a keen interest in anything pertaining to live stock. He owns Dellwood Farm near Fargo, where he breeds Duroc hogs and Holstein cattle, and also Glencraggy Farm near Mercer, where he has Shorthorn grade cattle. In 1910 he organized the New Salem Cooperative Dairy Breeding Circuit, which has been giving increasingly valuable results. He later started an extensive cattle pasturing experiment, which is now yielding its eleventh year of data. It is in this connection that he has done so much to promote sweet clover in the Northwest.

There is nothing hidebound or stereotyped in Professor Shepperd's method of thinking and working. His live stock bulletins are unusual. We call particular attention to the one issued in 1927, Bulletin 211, "Sweet Clover—Experiments in Pasturing," a 60-page publication full of unusual material presented in conversational form. There is not a dry moment in it. It is full of facts on sweet clover which result from Professor Shepperd's work.

In recognition of his service, two years ago North Dakota granted Professor Shepperd a year's leave of absence, when he made a trip around the world to study animal husbandry problems. Iowa Agricultural College conferred on him the degree of Doctor of Agriculture. He has since been named Acting President of the North Dakota State College to succeed Dr. John Lee Coulter, a well-deserved honor for one who has devoted so many years of service to agriculture in the Northwest.

Dean H. L. Walster

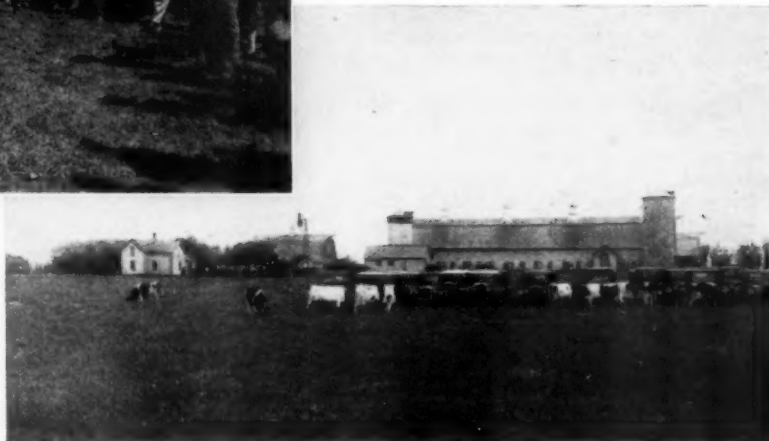
Dean H. L. Walster is primarily a student of crops and soils. It was quite natural, therefore, when he came to North Dakota Agricultural College in 1919 as Agronomist of the Experiment Station and Director of Soil Survey, that he should become interested in the utilization of sweet clover in restoring soil fertility. His experimental work has yielded valuable material and he has become more and more enthusiastic. He writes, talks, and preaches sweet clover.

Dean Walster graduated from the University of Wisconsin in 1908; received the degree of Master of Arts from Harvard in 1913, and Doctor of Philosophy from the University of Chicago in 1918. He was made Dean of the North Dakota Agricultural College in 1924, as well as Experiment Station Agronomist and Chairman of the Department of Agronomy.

In view of his authority, it is not surprising that Dr. Walster's en-



Fine cattle are becoming a part of the agricultural pride of the state. Good herds, diversified farming—and sweet clover.



dorsement of sweet clover has done so much to encourage farmers to include it as a regular part of their crop rotation plan. Dean Walster has also been active in providing facilities for the beekeepers of the state during their annual meetings and has taken part in their various programs.

The industry in North Dakota is fortunate in having two such men as Professor Shepperd and Dean Walster interested in their work.

A Dollar Per Ton to Support the American Honey Institute

By E. S. Miller

I am glad to note your editorial regarding the scheme of Michigan beekeepers for financing the advertising of honey. It would seem to be the only feasible plan yet devised. Let every live producer of honey contribute his dollar per ton to the American Honey Institute and then solicit all his neighboring beekeepers. If the Institute continues to function properly it is the best and cheapest advertising we can expect.

I cannot agree with the idea that an increase of production or the multiplication of inefficient beekeepers will improve prices or marketing conditions. To have increased the number of farm-wives selling butter never would have improved the butter market. It was only when creameries were established and operated on a business basis by men who counted costs and refused to operate without profit that the butter market became stabilized. So, also, honey production never will become profitable until commercial bee men handle the business in a business-like way.

Bulletin for Beginners

"Beekeeping for the Beginner in California" is the title of a new bulletin of fifty-two pages by Prof. G. H. Vansell of the California College of Agriculture.

It is prepared along lines somewhat different from the common run of beginner's bulletins and deals particularly with conditions in California. There is much elementary information concerning bees, equipment, location, etc., as well as necessary practice in the production of honey. There is also interesting information regarding the important honey plants of the state and the quality of honey secured from each.

This is a bulletin which will interest not only the beginner, for whom it is especially designed, but anyone interested in bees in the far West. Copies can probably be secured by addressing Prof. G. H. Vansell, College of Agriculture, Davis, California.

Honey Production a Real Business in Utah

Growth is noted in the honey industry in Utah. At present over a million and a half dollars is invested and in some sections beekeeping is the sole activity. Large crops are produced from sweet clover and alfalfa. The honey grades white and is of nice quality with a distinctive delicate flavor. The altitude of the state is sufficiently high so that during the blooming season there is a heavy nectar flow.

In 1929, honey was exported to Germany, England, and China, and a splendid demand has been created in eastern markets for Utah honey. Approximately 80 per cent of the crop is handled cooperatively.

On January 1 of last year, there were reported 70,375 colonies of bees in the state, owned by 1,267 beekeepers. In 1928 the average production of honey was 72 pounds per colony, with a total production of 5,067,720 pounds, valued at \$506,-

772.00; beeswax, 70,385 pounds, valued at \$21,115.50. G. P.

Honey Cranberry Relish

1 quart cranberries
2 cups honey 1 medium orange

Grind orange, peel and all (take out seeds), through the food chopper, also grind the cranberries. Mix together, add the honey, stir thoroughly and let stand for about twelve hours before using. Do not cook, either before or after grinding. If liked sweeter, add more honey.

Mrs. N. L. Lyle.

The Honey Girl Cocktail

Juice of 1 orange.
Juice of ½ lemon.
Juice of ½ lime.
2 ½ teaspoonfuls strained honey.
Yolk 1 egg.

Directions: Stir all liquids thoroughly. Then add egg yolk, unbroken; do not use any of the white.

Lida Keck-Wilgins.

Some Results on the Use of Fiehe's Test for "Overheated" Honey

By George S. Vansell and Stanley B. Freeborn, University of California

Table I

Sample No. and kind of honey	Source	Date of production	Date of test	Fiehe Reaction
1 Cotton extracted	Bakersfield, Calif.	Oct., 1926	Nov., 1929	+
2 Baby Lima bean extracted	Woodland, Calif.	July, 1926	Nov., 1929	+
3 Alfalfa comb	Smith, Nevada	July, 1928	Nov., 1929	+
4 " " comb	Belvedere, Calif.	1928	Oct., 1929	—
5 Water white extracted	Hawaiian Islands	1928	Oct., 1929	+
6 White extracted	Hawaiian Islands	1928	Oct., 1929	+
7 Extra light amber	Hawaiian Islands	1928	Oct., 1929	+
8 Light amber	Hawaiian Islands	1928	Oct., 1929	+
9 Star thistle mixt. extracted	Davis, Calif.	Aug., 1928	Nov., 1929	+
10 Sweet clover-alfalfa comb	Idaho	July, 1928	Nov., 1929	—
11 Orange comb	Orange, Calif.	April, 1929	Nov., 1929	—
12 Black locust mixture comb	Davis, Calif.	April, 1929	Nov., 1929	—
13 Sage comb	Orange, Calif.	May, 1929	Nov., 1929	—
14 Alfalfa extracted, lot 1	Imperial Val., Cal.	July, 1929	Oct., 1929	+
" " " 2	Imperial Val., Cal.	July, 1929	Oct., 1929	+
" " " 3	Imperial Val., Cal.	July, 1929	Oct., 1929	+
" " " 4	Imperial Val., Cal.	July, 1929	Oct., 1929	+

DURING the course of certain diastase investigations it was necessary to determine the Fiehe reaction on many honey samples. The recently published paper of Lampitt, Hughes, and Rooke, of England,* in which the reliability of Fiehe's test is questioned, makes the recording of certain data seem advisable.

In our hands, at least, the Fiehe reaction is not reliable in ascertaining whether honey has been subjected to heat. Many extracted unheated honeys give a positive color test after standing. The comb honeys so far tested have been negative. Storage at room temperature and exposure to air or light may give rise to hydroxy-methyl furfural, the substance indicated by the positive Fiehe. The data of Table I is submitted by way of record.

* Furfural and Diastase in Heated Honey. "The Analyst, Vol. LIV, No. 640, July, 1929, pages 381-395.

The Nevada alfalfa comb honey (No. 3) was subjected to heating over a 24-hour period. The results then obtained from the Fiehe test are shown in Table II.

Table II

Temperature Exposure	Fiehe Reaction
Raw	—
100° F.	—
110°	—
130°	Faintly +
140°	Faintly +
150°	+

More investigational work is desirable. The normal temperature of the interior valleys of the West may be sufficiently high to materially speed up the formation of furfural in honey exposed to the air during extraction and subsequent manipulation. Furfural is rapidly formed from levulose in acid solution at high temperatures, and the same reaction undoubtedly takes place slowly at lower temperatures.



Gay Messengers of Spring

By Betty Bee

NOW I am not a person who wants to reform the earth just for the pleasure of stirring things up and effecting a change, thereby perhaps making people uncomfortable. Far from it; but when I try to reform anything I am doing it entirely with an eye to permanent improvement—to make the world happier, to calm down querulous voices, sooth wrought-up nerves and cheer disgruntled folk generally. Now take our annual deluge of spring catalogues, for instance. Really there should be a decided change there. I have thought it all over carefully and know you will agree with me.

You have had, of course, your usual quota. I feel sure your family received theirs as mine always do—with open arms. You and your John and the youngsters probably have spent no doubt long evenings over them. Indeed there is nothing like a bran new catalogue to stimulate family interest. What a wonderful inspiration they are, with their gay new covers! How we are impressed by these charmingly smiling people pictured as they flourish these handsome checks of fabulous amounts! What beautiful weed-free apiaries, what stacks and stacks of supers, what glorious landscapes, all pictured in gorgeous rainbow tints, delightful suggestions to even a weary imagination that through this very catalogue one may easily step from stern hard work into comfort and affluence.

I am sure no Christmas package carries more hopes and joys and anticipated pleasure, no bride's "hope box" more delightful visions than these colorful catalogue. Stimulated by these inspiring suggestions, how our bee lots, wrapped perhaps in their winter garments of snow and sleet or drearily half hidden behind a spring fog, become exquisite dreams of summer beauty and loveliness and wealth. I am positive that I, myself, though naturally a bit lazy perhaps,

through these catalogues have hived more swarms, made bigger increase, extracted more honey, got stung less and banked more honey, reared finer cabbages and huskier turnips than anyone except an imaginative amateur beekeeping-gardeness could picture.

John and I read and figure, discuss and grow eloquent over the respective merits of the various products so delightfully pictured. We wonder how much better it is to run the wires up and down or to run them crosswise, so in order to avoid hurt feelings we decide to wire our frames both ways. We wonder, too, if the timid-looking gentleman with glasses behind the bee veil doubts the efficiency of his veil, which might account for his frightened look, or was it just the embarrassment some people always encounter when facing the "little birdie" of photographic fame. We admire the elegant gentleman in white shirt and collar, proper necktie and no doubt cuff links (Where do you suppose he left his coat?) so ably as an "expert appreciating this good uncapping can," and the youth who is so efficiently showing us how, even though blindfolded, he can manipulate sections. (If he cares to come about our place some time in May, I assure him he can have a job with our sections, and I shall not insist upon his being blindfolded either.) Yes, we like these catalogues. They give us food for thought. They thrill the imagination, they stimulate our ambitions; but honestly there is one big improvement that should be made, and I promise you, if the style and suggestion is not adopted before, if ever I become the proud author of a bee supply catalogue or seed book, there is one thing I am certainly going to do.

After you have read and reread your catalogue and your John has read it, and all the children have read it, and the neighbors have bor-

rowed it, and perhaps you have rescued it from the waste basket a time or two or from the back of John's desk, you sit down finally to make out your order. Then have you at that critical moment when you are all ready been confronted by a missing page—no, I mean by a blank where a page should be, or perhaps it is a price that should be in and is not, or perhaps you cannot compare the picture in your mind's eye with the illustration of the pet stenographer posing with this or that contrivance in full operation. Now just WHAT ARE YOU GOING TO DO?

Of course, you have waited (or your John has waited) until the very last minute to order this or that. There is not another catalogue within five miles. What is to be done? Now right here is where my idea of a really rational and practical improvement can be made. A situation like this calls for reform. I know you will agree with me.

Do you remember that A B C book with the Mother Goose rhymes attached that Aunt Lucy gave your Ethel years ago? How Ethel loved it and treasured it; how she took it to bed with her; how she made you read it a thousand times at least; how she herself pretended to read it; how she drizzled her bread and honey, milk and jelly upon it, left it out on the back porch and in the sand pile, and after months and months, years perhaps, it still keeps appearing, quite as fresh and charming as ever. The pup tried to eat it, but you rescued it. It was left out in the rain once or twice, but someone brought it in. You remember that book, don't you, a sort of linen or cloth combination? Now, really, my dears, why on earth don't our dear catalogue men take the hint and be practical? Think of the economy! These linen-cloth catalogues could be made to last for years—there is not much change in them anyway, is there? If all the neighborhood wanted to borrow it, it could not be worn out. It would not sift itself a page at a time over the floor, would it? If John forgot and left it out on a beehive, it would not matter. In fact there are times when it might be quite a convenience to him as well as to yourself if he could keep it out there where it would be handy. Rain would not hurt it **much** and if the pup got it—well, it would not hurt him much either. Besides, we would do away with that soul-trying moment when your John must have goods by return mail and that wail, "Where on earth is page so-and-so of the bee catalogue?" becomes the family despair.

So let us all get together and the very next time any journal or supply house puts in an ad and says "Catalogue free upon request," or some such stereotyped remark, let us sug-

gest that we greatly prefer to have our copy printed upon cloth, if it is just the same to them. I am sure they would take it kindly, and if they do not, we all know concerted action on the part of beekeepers can do a lot.

Are you using all the honey possible in your own cooking these days? I feel sure you are, and here are a few more recipes which I have found very pleasing and appetizing:

Glorified Parsnips. I think the parsnip one of the most maligned vegetables perhaps because it is not always properly cooked. I believe you will find them delicious this way: Scrape or pare the number of parsnips for the meal, slicing or splitting endwise. Drop into slightly salted water and parboil until tender, letting the water boil away as much as possible. When done, drain, setting aside the little water which remains. Place the parsnips in a skillet with one large tablespoon of butter, lard or meat fryings; let fry a few moments, then add one tablespoon of honey. When browned on all sides, add a little of the water and continue boiling and adding more of the water until a delicious thick brown syrup is formed. Serve piping hot.

Honey Brown Bread. Two cups whole wheat meal, one cup corn meal, one cup rye meal, one teaspoon salt, five tablespoons baking powder, four tablespoons honey, two cups milk, one cup currants. Mix dry ingredients, add milk and honey. Beat well, put into well-buttered baking powder cans, cover tightly, place in steamer or large kettle with enough water to come half way up on the cans, cover and steam two and one-half hours. Remove lids, place in oven to dry for ten or fifteen minutes. Serve warm or cold with butter and honey.

Lima Beans with Honey. Soak one pound of lima beans two hours or more in cold water, then drain, add enough water to cover, let parboil ten minutes, then add one-half teaspoon soda, stir well, drain and rinse. Replace to kettle or bean pot, add enough water to cover, one tablespoon honey, one-half tablespoon of salt, three or four slices of bacon and a little pepper. Bake until quite dry and tender. Serve with sauce made by mixing juice of one lemon with one teaspoon honey.

Stuffed Figs. Parboil ten to fifteen pressed figs until tender, or let soak over night and parboil. When done, fill each with a paste made by mixing one-fourth cup of ground graham crackers, one-half cup of chopped nuts, one well beaten egg, sweetened to taste with honey. Place in buttered bake dish in moderate oven and baste occasionally with a little of the syrup from the parboiled figs, honey sweetened. Serve hot or cold with cream.

Honey Whole Wheat Biscuits. Two cups whole wheat flour, four tablespoons shortening, one cup sour milk, two tablespoons honey, one teaspoon salt, one-half teaspoon soda.

Mix dry ingredients, then cut in shortening. Blend the honey and milk and add to first mixture. Work quickly, pat out on well-floured board, roll out about one-half inch thick, cut in shape, place in pan and bake in hot oven for ten to fifteen minutes. Serve piping hot with butter and honey.

Chinese Vitex Tree

By Adam Scott

One of the advantages of this tree over other nectar-producing trees is that it blooms from early spring until late in the fall, continuing for about six months, while many of the others last only about two to three weeks and are gone. The "Vitex" is not affected by droughts. During the long dry spell we had here this summer the little trees in my garden nursery, not yet one year old, kept on blooming while other flowers were dead. I counted as many as twenty-five bees at one time gathering nectar from one of these little trees, and the remarkable thing about it was that they would remain stationery so long, as though the nectar kept flowing as fast as the bees gathered it.

These trees seem to grow in almost any soil. They grow fastest in a rich garden rather than a clay soil. I only know of one of these trees that has reached maturity. It is located in Kansas. My attention was first brought to it by our deputy bee inspector for Missouri, who was assisting a Kansas inspector during an extremely dry spell. None of the bees inspected were bringing in honey until they came to this man's apiary. His bees were busy bringing in honey, and in answer to inquiry they were shown this "vitex" tree. The inspector told me it looked just like a swarm was settling on the tree. About that time I saw an ad in the American Bee Journal that seed from this tree was for sale at \$1.50 per ounce. I got an ounce, as did many other beekeepers in this community, and with all the care possible that we took none of us, or the owner of the tree, raised any of the trees. That was about two years ago. I wrote the department at Washington and asked for any nursery or place that I could buy some "vitex trees." They did not give me any, so last spring I bought another ounce of seed and gave the matter more study, and with the help of a foreign expert on growing difficult plants I succeeded in getting about 150 young trees started. The rapid growth is proven, as many of them now are three feet high and blooming the first year.

The tree that I referred to, I have learned from the owner, is about seven years old and has, as he states, a height of about 25 feet and a spread of about 20 feet, and the honey is of fine quality. So many people in this neighborhood have commenced raising bees that the question of bee feed in the near future was what so much interested me in this line. I plant white and sweet clover and buckwheat every year, but none of these, the best feed we have known, lasts very long, so that I am after something better, if possible, or something which will at least help what we have. Bees must have proper feed the same as cows, horses, and other stock.

"Raids on the Pantry"

The above is the title of an article appearing in the "Outlook" magazine, its issue of November 20, 1929, by Wainwright Evans. The article, which covers several pages, goes into a careful discussion of the pure food law after twenty-three years of use and shows the difficulty with complete enforcement of the pure food and drug act through the fact that the Department of Enforcement does not have sufficient funds to prosecute all cases coming under the act, but concentrates on the most flagrant violations.

Mr. Evans gives a clear exposition of the continued effort on the part of many manufacturers both to evade and to try to break down the strength of the present pure food law. He mentions the present corn sugar efforts at legislation as well as many other lines and rightly infers that if one exception is made to the food and drug act by congressional legislation, it will only be a few years until many other exceptions will be made through the same channels.

He appeals to the people not merely to urge their legislators to maintain the food and drug act as it is today, but strengthen it rather than weaken, by asking for larger appropriations for its enforcement.

The article is well worth reading. Copies can undoubtedly be obtained of local news agents or by addressing the "Outlook" itself at 120 East Sixteenth Street, New York City.

Boxelder County, Utah

Considerable growth in the honey industry is noted in Boxelder County, occupying the northwest corner of the State of Utah. In this area, containing 5444 square miles and lying in a section where there is an abundance of fruit blossoms in summer time, there are over 3,000 colonies of bees.

G. P.



A typical logwood tree in a typical Haitian setting. This is representative of the larger type of tree of this species and shows the growth characteristics of it. (Photo by E. O. Fippin. Location near Hinche, Haiti.)

Bees and Beekeeping in Sunny Haiti

Part One: Development of Beekeeping and Extent of Honey Plants

By Roger C. Smith

Entomologist, Service Technique, Department of Agriculture, Port-au-Prince, Haiti

ONE of the first questions to come before the writer upon his arrival in Haiti, July 15, 1928, was the advisability of establishing a small experimental apiary at the agricultural college to study honey production problems of Haiti and to investigate honey shipping methods. There being a request that some work be started, a survey of beekeeping in Haiti was begun and this article is a report of the findings. The survey has been in no wise complete nor detailed, but probably has been sufficient to reveal the more important facts of the situation.

Historical Development of Apiculture in Haiti

Beekeeping has been carried on in Haiti for many years. It probably had its beginnings during colonial times, which ended in 1803, and its continuance has been more or less hereditary in families. About twenty-five years ago Mr. E. Nazon began keeping bees near Cap-Haitien. He showed others how to produce honey and he has been a prominent factor in the production of honey in the North ever since. He states that modern apiculture in Haiti began about 1900 by the formation of a society

composed of Haitians and foreigners, chiefly Jamaicans at Cap-Haitien.

It is interesting to note that Mr. E. L. Sechrist, Associate Apiculturist at Washington, once had sixteen hundred colonies of bees in Haiti and Santo Domingo, which he kept for two years. He has published the only account of beekeeping in Haiti known to the writer (Sechrist: Bee-

keeping in Haiti and the Dominican Republic, *American Bee Journal*, 1923, 63: 167-170, 4 figs.).

Present Status of Beekeeping in Haiti

The actual number of beekeepers in Haiti is not known and cannot be ascertained. However, certain data from the Financial Adviser-Receiver

Table I—Exports of Honey by Districts and Ports of Shipment

	1925-26		1926-27		1927-28	
	Kilos	Gourdes	Kilos	Gourdes	Kilos	Gourdes
North Haiti						
Cap	335,221	310,115	458,570	437,308	397,590	379,280
Port-de-Paix	1,401	1,350				
Total North Haiti	336,622	311,465	458,570	437,308	397,590	379,280
Artibonite						
Gonaives	31,519	27,915	48,061	45,846	31,426	29,976
St. Marc	47,409	40,680	57,018	54,299	48,712	46,467
Total, Artibonite	78,928	68,595	105,079	100,145	80,138	76,443
Central Haiti						
Port-au-Prince	93,393	85,100	103,190	98,424	60,115	57,344
Jacmel	4,556	4,300	4,725	4,507	2,571	2,451
Total, Central Haiti	97,949	89,400	107,915	102,931	62,686	59,795
South Haiti						
Jeremie	6,843	6,290				
Cayes	51,781	46,395	58,753	56,010	59,271	56,530
Aquin	32,003	29,000	37,019	35,208	42,490	40,532
Miragoane	15,805	12,825	20,491	19,547	16,187	15,439
Petit Goave					2,143	2,044
Total, South Haiti	106,432	94,510	116,263	110,765	120,091	114,545
Grand Total, Haiti	619,931	563,970	787,827	751,149	660,505	630,063

Note: 1 kilo equals 2.204 pounds; 1 gourde equals 20 cents.

General's office on importations of beekeeping equipment and of exportation of honey indicate where the beekeepers are and what they are accomplishing.

Table I indicates the amount of honey shipped from the various ports of Haiti. These ports are grouped into the four natural geographic regions of the country (Fig. 1). It will be seen that North Haiti exports the largest amount of honey and wax and that South Haiti comes second. It is reasonable to expect that North Haiti has the largest number of stands of bees and perhaps of beekeepers also, and that this is the best region for beekeeping. This is the current opinion among beekeepers.

Table II—Exports of Wax by Districts and Ports of Shipment

	1925-26		1926-27		1927-28	
	Kilos	Gourdes	Kilos	Gourdes	Kilos	Gourdes
North Haiti						
Cap	125	520	334	720	---	---
Port-de-Paix	---	---	2,730	9,700	979	1,958
Total, North Haiti	125	520	3,064	10,420	979	1,958
Artibonite						
Gonaives	---	---	290	899	---	---
St. Marc	---	---	---	---	---	---
Total, Artibonite	---	---	290	899	---	---
Central Haiti						
Port-au-Prince	---	---	---	---	---	---
Jacmel	---	---	---	---	---	---
South Haiti						
Jeremie	---	---	---	---	1,075	2,150
Cayes	473	1,460	741	2,464	1,009	1,874
Aquin	---	---	---	---	---	---
Miragoane	---	---	---	---	---	---
Petit Goave	---	---	---	---	---	---
Total, South Haiti	473	1,460	741	2,464	2,084	4,024
Grand Total for Haiti	598	1,980	4,095	13,783	3,063	5,982

Table II shows to what countries the surplus honey of Haiti is shipped. Practically all of it is sent to France and Germany. This has been the case for many years. For the most part exported honey has not been in

the proper condition demanded by the critical buyers of the United States.

Apiary Equipment

In most apiaries the beehives consists of transformed shipping cases for two five-gallon gasoline or oil cans from the States. These boxes measure $14\frac{1}{2} \times 10\frac{3}{4} \times 22\frac{3}{4}$ inches. The ends are made of $\frac{3}{4}$ -inch pine and the top, bottom and sides of $\frac{1}{4}$ -inch pine. The bottom and tops are removed and a shoulder nailed across each end near the top for the frames to rest upon. An ordinary brood frame fits nicely into them, though the space at the ends is more than should be permitted. These boxes are used both for brood chambers

two supers is the rule, very rarely more than two ever being used.

Most beekeepers produce extracted honey. All extractors seen were either two- or four-frame reversible extractors from the United States or of a French make, the former greatly predominating.

Some beekeepers have a honey house in connection with the apiary, in which they keep their extra equipment and extractor. In no cases seen were they bee proof, and sometimes they were only the crudest shelter.

Export Containers

Most extracted honey is shipped in 30-gallon barrels to Germany, France or England (Table III). Old engine oil or cottonseed oil drums or wooden barrels which have been used to import salt pork to Haiti are used. The wooden barrels are washed and paraffined within before using. Oil barrels are variously cleaned, but generally an oil odor remains. Sheet tin, and particularly tin, or glass containers are very costly because of the duty and shipping charges. Individuals do not always clean the barrels properly and consigners have objected to the honey. The shipping container is the first problem of Haitian apiculture needing attention. The Service Technique is investigating the possibility of making casks or barrels from native woods, of cleaning out five-gallon gasoline or kerosene cans or of importing sheet tin and making suitable cans. At present the old salt pork barrels cost \$3.00 each ready for use. The uncleaned barrel costs \$2.00. Cleaning costs 20 cents, washing 20 cents, and treating with hot paraffine costs 60 cents. These barrels hold up very well; the shipping loss is usually confined to 2 or 3 per cent.



A typical hive in Haiti in the best condition, showing the use of gasoline shipping boxes. The contracted entrance in September prevents robbing. This hive is from the Breton apiary.

and supers. When new and close fitting they do very well. The boxes are obtained free or for no more than 15 cents, so the hives cost little or nothing, depending upon what the maker's time may be worth. The bottom boards and cover are made of the same material, with two strips nailed across to hold them in place. Usually strips are nailed along the margins of three sides of the bottom board on the upper side for the hive to rest upon. This provides an entrance for the bees.

Within the hive one finds almost invariably movable frames, and these come largely from the prominent supply firms in the United States (Table IV). Most of the frames are wired. Ten frames are hung in the hive body and seven or eight in the supers. They have found that with fewer frames in the super the combs are heavier and honey production is increased. Between the brood chamber and first super the beekeepers place a queen excluder. It is not infrequent to find three or four supers on a hive during the summer. This is the beekeeper's method of storing empty frames during the slack season. They put them on a strong colony, and the bees keep out the two species of waxmoths which occur here. During the honeyflow



An apiary near Hinche, showing hives in poor condition and entrances largely blocked by vegetation.

Table IV—Importations of Beehives			
Utensils and instruments for beekeeping			
Country of	1925-26	1926-27	1927-28
Origin	Val. Gds.	Val. Gds.	Val. Gds.
United States	15,950.-	12,064.-	9,506.-
France	520.-	98.-	343.-
Germany	535.-	-----	-----
Great Britain	50.-	-----	-----
Holland	1,165.-	-----	-----
Totals	18,220.-	12,162.-	9,849.-

Note: Five gourdes equal one dollar.

Honey Plants of Haiti

Practically all plants of Haiti give a little honey or pollen, or both. Table V is a list of the more important honey plants and certain data concerning them as honey plants. A few are of value, to the beekeepers, only as a source of pollen for the bees. The attention of the reader is called particularly to those plants which bloom during the dry season, or the slack honey-producing season, which is May to about October 1. There are sufficient plants to enable bees to maintain themselves and for the starting of new colonies in preparation for the big honeyflow which begins early in October.

The chief honey plant of Haiti is the logwood, *Haematoxylon campechianum* L., which produces, during the period January to March, a large amount of nectar. Logwood honey is very clear and of a very desirable quality. This tree is particularly plentiful in the northern part of the island, but occurs over the entire island. The tree is thought to have been introduced into Haiti as a honey plant and dye wood, probably from Central America or Mexico. It grows on the plain and over the lower hills, but is less common in the mountains. Logwood as a source of honey, however, offers little encouragement for a big bee industry in the future, for, as is pointed out in the annual report of the Financial Adviser for 1926-7, page 24:

"The logwood supplies of Haiti are becoming more and more inaccessible

and are also being depleted much more rapidly than they are being replenished by natural causes. Re-planting of logwood trees has not been attempted in any systematic manner."

It has been found that practically all the seeds are attacked by a small wasp while still on the tree.

Mr. Sechrist has pointed out the possibility of increasing the exportation of wax. Since the waxmoths are so destructive, making it difficult to keep the empty supers free from them during the slack season, it would appear that this is a practical suggestion. The possibility of melting the comb without removing the honey, then separating the two, was suggested as worthy of investigation.

Map of Haiti. The Dominican Republic lies to the east. North Haiti has the largest number of bees and perhaps of beekeepers. It is the best region for beekeeping

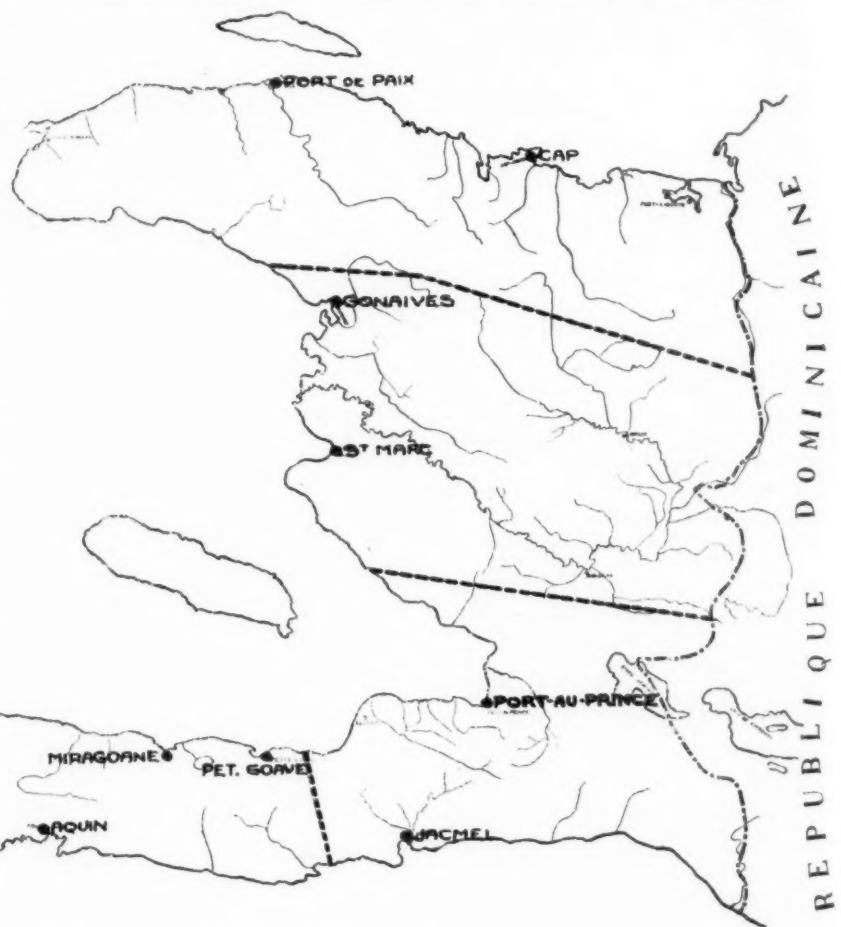


Table III—The Exportation of Honey from Haiti

	1923-1924		1924-1925		1925-1926		1926-1927		1927-1928	
	Oct. 1 to Sept. 30	Weight	Oct. 1 to Sept. 30	Weight	Oct. 1 to Sept. 30	Weight	Oct. 1 to Sept. 30	Weight	Oct. 1 to Sept. 30	Weight
France	282,807	140,960	245,696	206,000	213,008	180,605	257,916	245,734	202,658	193,304
Germany	10,613	5,165	352,584	236,675	281,662	267,995	516,377	492,531	457,849	436,759
Netherlands	14,600	2,125	25,799	13,540	-----	-----	-----	-----	-----	-----
United States	28	25	19	10	-----	-----	-----	-----	-----	-----
United Kingdom	-----	-----	24,748	17,755	125,261	115,370	13,534	12,884	-----	-----
Totals	308,048	148,275	648,846	473,980	619,931	563,970	787,827	751,149	660,507	630,063

Note: Weights are in kilograms. Multiply by 2.204 for pounds; e. g., 28 kilos equal 61.71 pounds. Values are in gourdes. Divide gourdes by 5 for U. S. dollars; e. g., 25 gourdes equal \$5.00.

Publisher Likes Bees

A recent issue of "Publishers' Auxiliary" contains a sketch of Walter Franklin, publisher of the Cleveland (Tennessee) "Herald." Franklin is vice-president of the Tennessee Beekeepers' Association, and, although he keeps bees only as a hobby, he is an enthusiastic booster for the craft. The sketch mentioned devotes most of its space to his beekeeping interest and has but little to say about his newspaper business. Franklin is represented as one who plays bees rather than golf, and from them finds pleasure, outdoor exercise, and makes some profit. Since most hobbies are the source of expense rather than profit, the "Auxiliary" story is decidedly to the credit of the bees.

Table V—The More Important Honey Plants of Haiti

Name of plant	Extent of nectar	Period of bloom	Pollen	Color of honey
Logwood (most important honey plant in Haiti)	Oct. for 15 days, Jan. to March	Large amount, similar to tulip tree flower	Some	Very light
Mombin	September, Oct., April, May	Important	Some	Medium
Queneppe	April and May	Important	Some	White
Palm tree	All year	Good flow	Little	White
Avocada (the only plant from which green honey is made)	January to April	Good flow	None	Greenish
Carpet grass	Jan. to April	Good, especially in July	Much	Brown
Mango tree	Feb. to April	Good flow	Some	Brown
Eucalyptus	Oct. to Dec.	Good flow	Some	Very light
Belle mexicaine	All year	Good	Some	Brown
Peas and beans	Dec. to Feb.	Good	None	Medium
Flamboyant	June to August	None	Much	
Corn	All year	None	Much	
Fleur sureau	All year	Little	Much	White
Coffee	Aug., Sept., Oct.	Good	Some	Clear
Rayahonde (Mesquite)	July and August	Much	Some in dry seasons	Medium
Citrus trees	Dec. to April	Good	Some	Medium
Gaiac (around Port-de-Paix chiefly)	Jan. to May	Much	Some	Brown
Goyave	All year	None	Much	
Giromon (a kind of squash)	All year	None	Much	
Honte (useful for starting colonies in North)	After first rains in September	None	Much	
Liane savon (soap vine)	Oct. to Dec.	Good	None	Medium
Manioc (cassava)	All year	Good	Some	Medium
Melons	All year	Some	Some	Medium
Sweet potatoes	All year	Some	Some	Medium
Pomme acajou	Jan. to April	Much	None	Medium
Tamarin (gourde tree)	June to August	Some	None	Medium
Cayemitte	June to August	Some	Some	Medium

Table VI—Exportation of Beeswax from Haiti

	1923-24		1924-25		1925-26		1926-27	
	Kilos	Value	Kilos	Value	Kilos	Value	Kilos	Value
France	66	60	7,999	5,570	125	520	44	139
United States	1,396	4,345	293	990	473	1,460	3,488	12,225
Germany							563	1,419

Note: Values are in gourdes, five gourdes equalling one dollar.

The Germ Killing Power of Honey

By C. H. Gilbert, University of Wyoming

AS I glanced through some old copies of the American Bee Journal a few days ago, I noticed an item in the "Editor's Answers" on page 32 of the January, 1929, issue which interested me very much. The beekeeper who asked the question, after reading about the work of W. G. Sackett of Colorado, was unable to understand why honey, which would kill typhoid germs, would not kill germs of American foulbrood. This question seems to be confusing to the average beekeeper because he has not taken the time to study the technical side of the question. It seems to me that the most important point was overlooked in this discussion. The point is the difference between the germs causing American foulbrood and the one causing typhoid fever. Perhaps this simple explanation might be of assistance in answering this question.

Some organisms have the ability to change their form when they are placed under unfavorable environment. Bacillus larvae, the organism which causes American foulbrood, has this ability. The two forms are: 1st, vegetative, or growing stage, and, 2nd, the spore form, or resting stage. We might say then that a spore is comparable to a grain of corn which

is resistant to extreme temperature changes. It is the resting stage.

The vegetative form is comparable to the young shoot of corn which is easily destroyed by extreme temperatures, or drying. It is the growing stage.

The spore form of Bacillus larvae gains entrance to the digestive tract of the larvae in the food and later changes to the vegetable form. It then begins to grow and multiply. This multiplication takes place very rapidly and finally causes the death of the larvae. In the advanced stages of this destruction of the larvae there is no longer food for the vegetative forms of Bacillus larvae so, because of this unfavorable environment, they gradually transform to the spore stage. In the dried scale, found in the base of the cells of the brood comb, only spores are found.

The spores of Bacillus larvae are resistant to extreme temperatures, action of moisture, ordinary disinfectants and drying. The organisms of the typhoid group are not spore formers and are, therefore, readily destroyed by extreme temperatures common disinfectants and drying.

When vegetative organisms are placed in honey the water is extracted from them and the cell walls

are broken down causing death. This extraction of water and breaking down of the cell is called plasmolysis. Vegetative forms of Bacillus larvae are probably destroyed when placed in honey, but the heavy cell wall of the spore form resists plasmolysis, and the spore is not injured.

Once the spore gets into the honey it remains there in the so-called resting stage until the honey is fed to the larvae. It then changes into the vegetative form, completing the life cycle.

(This explanation is very good. Accept the thanks of our readers and ourselves.—Editor.)

Organization Growing in Canada

At the meeting of the Ontario Co-operative Honey Producers' Association, December 18, W. A. Weir, of the Association, stated: "We are making distinct progress toward some sort of a dominion-wide organization among beekeepers. Eventually we hope to have the Government grade all honey, both for domestic and export market, and in the near future we hope to have official markings of grade on all our export honey. We have the same thing with fruits, dairy products and other agricultural commodities. Once the overseas buyer is sure that the grade of honey is guaranteed by the Government, he will have a great deal more confidence in our product. That we can produce the best in the Empire is indicated by our repeated winnings at the Empire Dairy Show in Great Britain, but we will not get full advantage of this wonderful advertising till all our exports are inspected, graded and stamped by Government officials."

In the last ten or twelve years beekeeping has developed wonderfully in the western provinces, so that the three Prairie Provinces and British Columbia supply their own wants and also have a surplus to export. Ontario has lost its western market and outlets have to be found elsewhere. Naturally she has turned to consumers across the Atlantic, and a fair-sized trade has been built up.

In Ontario the home market conditions are not all that could be desired. The large independent shipper in Ontario, the car lot man, is causing most concern. There is still a good deal of Ontario honey moving westward in competition with western produced honey, and, of course, there is a big volume of trading in small lots between producers and consumers direct. All the producers are looking to some sort of Dominion-wide organization as the solution. If the principal producers in the country will link together, it is believed that a good deal of waste can be prevented.



More Adventures of the Bee Fairies

By Aunt Laura

Synopsis: Four children, Robert, Dickey, Mildred and Doris May, in company with their Aunt Laura, who keeps bees, are changed by Fleet Wing, a bee fairy, into bee fairies also, and after journeying for water for the colony are permitted to visit the bees, being told by their guide, Fleet Wing, to stay away from a cross old bee policewoman, Madam Poor Site.

Chapter 2

"Getting Acquainted"

SO to the left of the hive they flew, Fleet Wing and the bee fairy children. To the right, in front of a group of other policewomen, stood the aggressive Madam Poor Site. So busy was she inspecting and challenging each bee that approached that she did not notice them, for you may be sure they kept close to Fleet Wing, though they glanced eagerly all about them.

On the left, just as Fleet Wing had said, were grouped the friends of their guide. These looked the bee fairy children over carefully, then let them pass on in. Although for human eyes the home of the bees would have seemed very dark and dingy, to the eyes of the travelers, as well as to Fleet Wing and the other bees, it was delightfully bright and attractive.

Bees, bees, bees, everywhere. Some were working steadily at their tasks, others moved about, others were apparently resting. On either side they noticed groups of bees standing with firmly placed feet, wings held high, vigorously vibrating.

In spite of the excitement of this new experience, Robert asked Fleet Wing, "Now do tell me why they do that?" Their guide replied, "You remember I told you about using our wings in keeping our houses ventilated. That is just what those are doing. Today with the bright sunshine it would be much too warm in here for our precious babies and for our honeycombs if we did not keep our fans going to cool it off. Our wings are our fans, don't you see?"

"But how funny," added Mildred. "Please do tell us why on that side the bees all stand with their faces toward the doorway, while on the other side they all stand with their faces toward the back of the hive. It looks so odd."

"That is an easy question," said Fleet Wing. "By standing that way, don't you see when their wings are going the air is fanned in to the house on one side and out of the house on the other? That is how we keep it at the correct temperature or dry it out if it is damp. But come, let us find a good place to put our loads of water. Then we can rest a little and I can introduce you to some of my friends."

Following Fleet Wing closely, the children and their Aunt Laura, all safely disguised as bee fairies, made their way across the bottom of the hive, past the hundreds of bees, all busy with their work. Then, climbing upward over a frame of dark wax and treading their way through other crowds of bees, they came on top of the frame to a number of little depressions in the wax.

"Here," said Fleet Wing, "is a splendid place, so let's put our water here. Empty your sacks, please. After all it is fine to rest a bit here at home."

Just then a bee addressed Fleet Wing: "By all means put the water there. It will be out of the way and ready for us when we need it; but you need not bring any more just now, for the nectar is beginning to come in, they tell me, and we will surely have our hands full taking care of it. Today the flowers are filling with nectar nicely and we will have to hustle to make room for it."

"I suppose you heard, Fleet Wing," she continued, "that our lady gave us more room upstairs this morning. In fact she put on a whole new story. I am so glad she did not forget as she did once before, and keep us at our wits' end trying to find a place to put our harvest."

The children looked at Aunt Laura and smiled, for well they remem-

bered of hearing their aunt tell about her bees being overcrowded.

"She has taken good care of us this time," said the bee. "If you will believe it, all this new story is filled with what I heard her call 'full sheets of foundation,' whatever that means, but anyway it is a great convenience and help to us, and everyone is getting to work as fast as possible to build it into comb ready for nectar."

Again the children nodded to their Aunt Laura and smiled, for that very morning had not they themselves been with her in the honey house when she fixed those sheets of foundation, and later watched her as she put them into the 'new story,' as the bees called it?

"This is a great help to have those sheets of beeswax all so neatly marked out into little cells. It saves a lot of time and trouble. I am sure our lady is very kind and thoughtful," agreed Fleet Wing, laughing. Then she introduced this talkative bee to Aunt Laura and the children. The bee's name proved to be Yellow Band, and she certainly was a pleasant, jolly creature.

"Please tell us," begged Robert, "how you get that foundation all ready for the nectar?"

"It is a long story," said Yellow Band, "but if you have time to listen, and Fleet Wing is not in a hurry—"

"Take your time," replied Fleet Wing, politely.

So Yellow Band went on to explain the work upstairs, how during a heavy honeyflow, by eating a great deal of honey, inside the bodies of the bees are made tiny thin pieces of white wax.

"Each worker bee," Yellow Band told them, "has on the underside of her body eight little pockets, from which these bits of wax, called wax scales, come."

Of course, Robert and Dickey were delighted with this idea of each having such a lot of nice pockets in their funny bee jackets, and Yellow Band was kind enough to show them just where to find them, but assured them that bees use these pockets for wax scales only.

"Why can't we make some scales?" suggested Dickey.

"You can, my dear," Yellow Band assured him, "but you must wait until you have eaten a great deal of honey before your pockets will be filled."

Of course, Robert wanted to begin eating honey at once, but Fleet Wing reminded him it would perhaps be better to look about their house a little more before he started to do so.

"Tell us more about these scales," asked Mildred.

Yellow Band continued: "In times like this, when the flowers have nectar for us we have to find some place to put it, as you know, so we build

what is called honeycomb, which is just the box or jar in which we put our honey for safe keeping. Sometimes our kind lady (here Yellow Band bowed respectfully to Aunt Laura) gives us what she calls foundation, as she did this time. Sometimes we just tuck little combs here and there about our house where we have a bit of extra room. Sometimes we may even build a good-sized comb if we have the space; but into these we put our nectar."

Robert interrupted: "I just don't see how you can build honeycomb out of scales."

Yellow Band smiled. "My dear, that is easy." Then she turned to Fleet Wing: "Why not take our guest up into the new story? Then they can see for themselves."

"That is indeed a good plan," nodded Fleet Wing.

They had scarcely started when Doris May, forgetting to be timid, cried: "Oh, look, is that bee doing it now?"

Turning, they saw a bee, tiny flecks of white slowly pushing themselves from her pockets. While the bee fairy children were watching, another bee came up and quickly picked up the scales and then with her jaws began kneading wax in the most energetic way, turning it round and round, over and over, until it became quite soft and pliable.

Yellow Band called to her and when she came over introduced her as Miss Brown Feet. Obliging Miss Brown Feet showed Robert and Dickey just how the wax scales were handled, and even found a scale or two for them to practice on. What jolly fun it was! How they enjoyed this new experience, and how energetically they pulled and punched, kneaded and poked these bits of wax!

"It's more fun than a punching bag," said Robert.

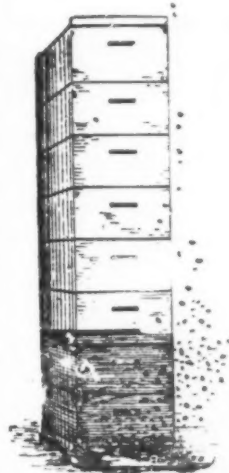
"Or a football," laughed Dickey, quite out of breath.

Then together they traveled up into the new story, where gleaming and yellow were the beautiful sheets of foundation. Here Yellow Band and Fleet Wing showed them just how to pack the softened wax down on the tiny "print" of the foundation to form the side of a new cell. Then Miss Brown Feet got some scales for the girls and Aunt Laura and all worked briskly—"just like building a snow man," as little Doris May said—until the outline of a group of new cells was to be distinctly seen, and Fleet Wing had to remind them there were many other interesting things to see and do, so they bid good-bye to Miss Brown Feet and Yellow Band and with Fleet Wing started to hunt for more adventures, of which we will tell you in the next chapter.

(To be continued)

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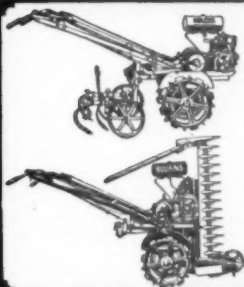
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THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

QUESTIONS GALORE

1. I caught a swarm last spring. They did not make any brood, so I sent for an Italian queen and it did not take long till all the bees were Italians. While there were a few dead bees at the other hives, this hive had hundreds of dead bees pretty near every nice day. On days that the bees were flying out, I noticed only with this hive drones going in and out, even last month. There still are many bees left.

2. All my bees are the black ones. Now I don't know how old the queens are in the other hives. Should I order new young queens for them, or should I try to raise some extra queens in the one hive with the Italian bees, or would this not be safe on account of so many dying in this one hive? They have plenty of sealed honey left.

3. If there is honey left when they start gathering the new crop, should this be removed or left in?

4. Do they need artificial shade if there are no trees around?

5. What is a nucleus?

6. I made an observation hive, glass on both sides. Should there be wooden doors over the glass? On either side?

7. We always sow many flowers in the garden. Are there some kinds you could advise us to sow for the bees?

8. May I come later on with more questions?

I am just a beginner with bees and am getting quite a little help in reading the Bee Journal.

MISSOURI.

Answer—1. The reason why that hive lost so many bees is that they were queenless a long time and did not fly out much. But after you gave them a queen, they felt the need of bringing in pollen and honey for the brood, and those old bees died in greater number than in the other hives, where they had kept on working in the usual way. The existence of the drones is also due to their having been queenless.

2. If I were in your place, I would rather buy a lot of Italian queens to replace the black ones. After you get a certain number of Italian colonies, it will be easier for you to get pure matings than it would be now. But you need not be afraid of the bees dying, after this, any faster than is natural.

3. They probably will not have much honey left from last season when the fruit blossoms come. If they had a large amount, it might be advisable to extract it, but I do not anticipate such a condition.

4. Artificial shade is very good for hives. We always use movable roofs made of coarse lumber.

5. Nuclei is the plural form of nucleus. A nucleus is a small hive containing only a few combs, sometimes smaller than the regular combs of a hive. These nuclei are used to rear queens.

6. Observation hives may be left open on one or both sides. We have always preferred to have doors over the glass, but some people use them without doors.

7. The flowers of a garden do not amount to much as honey supplies for the bees. Many of our garden flowers yield only pollen. If you want flowers for your bees, sow some sweet clover in the waste lands of the neighborhood. It will be good for the land and good for the bees.

8. Yes, you may ask more questions at any time. But if you buy a textbook on beekeeping, you will gain a great deal by reading it carefully. We send you a list of such books.

THE "FOOD CHAMBER"

1. I have eight colonies of bees and would like to adopt the food chamber system. What would you recommend, the shallow super or the full-depth super? So far I have only produced comb honey. Can you use shallow super for extracting? The winters are not very cold nor long here, but sometimes the honeyflow is only very short, like we had last summer.

2. Is it really worth while to have a food chamber?

3. Do you have to wire the frames of a shallow super?

4. How often do you recommend to requeen? Some of my queens are three years old and over and seem to be in good shape yet.

5. Can bees make wax out of sugar syrup?

ARIZONA.

Answer—1. If your hives are the eight-frame, the shallow super is too small for anything. So with the eight-frame hive, I would use full stories for food chamber.

2. A food chamber is very often necessary with the Langstroth hive, because it is so shallow. But with the large Dadant hive we need no food chamber, because the bees have room enough above the brood to store what honey they need.

3. We do not wire the frames of a shallow super.

4. We do not recommend to replace queens more than every second year. But there is no need to make a rule for this. Whenever a queen looks unsatisfactory, because she lays too few eggs, we replace her at once. On the other hand, we have had queens three years old that we disliked to replace, because they had been so very prolific.

5. Yes, bees can make wax out of sugar syrup, but it does not pay. It takes from ten to eighteen pounds of sugar to make one pound of beeswax.

FEEDING BEES IN CELLAR

Why would it not be a good plan to feed the bees in the cellar honey and water in order to start brood rearing thirty days ahead of taking them out of the cellar? If not, why? I have found colonies that had as high as eight frames of brood in all stages, from the cellars, March 1, and showed no sign of distress.

My reason for it was to split the best and make increase about two weeks after taking them out of the cellar. Buy young queens, of course, for the increase. They are wintering in fine shape and have lots of honey. I wanted to split two hundred colonies. I am no beginner, but just hated to try on that number if the spring were cold; our honeyflow starts about July 1 and goes through till frost. Have a real good wind protection and plenty of pollen, if they can get it.

MINNESOTA.

Answer—We are afraid of urging the colonies to breed very long before they are taken out of the cellar. First, they do not always have pollen, and if we give them water they are likely to suffer, unless they are taken out shortly after.

As to dividing them so soon after they are taken out, we consider this very risky. It may do where you are located, but it would not do here. At any rate, I would not try it on a very large scale.

PACKAGE BEES TO WEAK COLONIES

I have a number of weak colonies and want to give each a one-pound package of bees from the South as soon as the weather

permits. Now when the packages come, how can I unite them with the weak colonies? Will this plan work: Put an empty hive body over the weak colony and a bee escape board between, so that the bees from the package can go down below where wanted?

KANSAS.

Answer—I think your method is all right, but you must feed both the colony and the pound of bees, so that none of them will consider the others as robbers. You must also make sure that no robbers will get into the hive.

FERMENTED HONEY

I handle a few stands or colonies of bees, not for profit—only to supply my table. I took off supers last fall and set them in the basement of my house, which was very warm, and they stood for quite a while before I extracted. I put the extracted honey in Mason jars and left them in cellar or basement and it fermented and partly ran over. What I want to know is, what can I do with it? Can I feed it to the bees in the spring to stimulate and make them strong for the beginning of work in the spring, or would it be better to feed them syrup? What caused this honey to ferment? Was it too warm, and should honey extracted be kept in a cool place?

MISSOURI.

Answer—Your honey probably fermented because of your keeping it in a damp place. The driest place in your house is the proper place to keep honey. It may be also, however, that the honey was not ripe enough when taken off the hives.

We would recommend that you heat it slightly, say up to 140 degrees. This will evaporate the ferments.

That honey is all right to feed to your bees in spring to induce breeding early. But be careful not to induce robbing. Feed in inverted tin cans with a number of small holes in the lid, and place it over the brood combs. Feed in the evening when the bees are no longer flying.

FEEDING HONEY—SPRING FLIGHTS

1. I have some dark honey which my bees gathered late in the fall. It is quite thick, somewhat sticky, and soon turns to sugar. Would this honey be good to feed to the bees this spring, or would it be better to mix it with sugar dissolved in water for young brood?

2. I moved six of my stands close together late in the fall to make packing easier. I notice these warm days when they fly they fight. I thought maybe they got mixed up in finding their one entrance. Those I left on the summer stands seem not to be bothered that way.

3. I intend to move these six stands about seven rods, but I am afraid it is too early yet.

Would it be all right to set honey out a short distance from the hives at this time of year whenever they take flight? On warm days they are buzzing around the bee house, trying to get inside.

KANSAS.

Answer—1. Your dark honey will be all right to feed to the bees in spring without mixing water with it, although you may put in a little water at the time of breeding.

2. Yes, it is the moving together of hives that causes them to fight, because they do not recognize the spot where they are now and get into the wrong hive. It is a big mistake to move bees late in the fall, when they have no occasion to recognize their new spot. They remember the old spot.

3. Yes, it is too early to move those bees. When you want to move them, wait till some fairly warm weather. Then smoke them well, in the morning early, and keep them closed till you have moved them. Then open their hives, putting a slanting board in front of the entrance, so they may understand that the location is changed and look around as they come out. In this way you will lose less of them.



DISPLAY YOUR HONEY PERFECTLY

Dependable Service on Standard Sizes

Our fluted honey jars are made as per specifications of Standardization Committee of the American Honey Producers' League

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HART BOTTLES & JARS

	1 to 11	11 to 20
1-lb. package	\$2.00	\$1.75
2-lb. " "	3.00	2.75
3-lb. " "	4.00	3.75

Queen with each package. Selected untested queens, 1 to 11, \$1.00; 11 to 20, 85c. All bees and queens pure Italians.

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Honest quality, weight and service backed by a lifetime experience in breeding and shipping. Usual guarantee of service, satisfaction and safe delivery with each shipment.

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Clear & Crystal
HONEY JARS
will sell your honey



No panels to catch shadows which darken the color. Beautiful in Clarity and Pattern, and Strength in Construction.

4 SIZES — Individual, Half Pound, One Pound and Two Pound. Accurate Graduation.
WRITE FOR SAMPLES AND PRICES
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WHEELING, W. VA.
WORLD'S LARGEST MANUFACTURERS
GLASS FOOD CONTAINERS

**"RELIABLE SERVICE" QUALITY, SERVICE AND
My Motto FAIR PRICES**

I guarantee safe arrival, full weight, prompt service, and entire satisfaction

PRICE LIST

1-Pound packages with select untested queens	\$3.00 each
2-Pound packages with select untested queens	3.75 each
3-Pound packages with select untested queens	4.75 each
Deduct 25 cents per package on orders for ten or more packages	
Select untested queens, \$1.00 each. Ten for \$9.00; twenty or more, 75 cents each. Select tested queens, \$1.50 each.	

HAYNEVILLE APIARY CO.

W. E. Harrell, Prop.

Hayneville, Alabama

Mention the American Bee Journal When Writing Advertisers

We do not believe in setting honey out for the bees to rob. Better feed inside of the hives, in the evening, when the bees have all gone in. Then there will be less danger of robbing and fighting.

UNITING

I have one colony of bees which I call halfbreeds, as the queen mated with a black drone. I want to kill this queen and unite this colony with one of my weakest Italian colonies. Will it be necessary to cage the Italian queen when uniting. I want to unite before they begin raising drones, and this will be before any fruit blooms put out, as they breed early here; they are carrying in pollen today from tag alder buds.

Will there be any danger of the bees killing the queen to unite at this time or early in February, before nectar comes in?

ALABAMA.

Answer—I would not recommend taking any risks if the bees are to be united before there is honey in the fields. Better feed both colonies fairly heavily, then kill the queen that you do not wish to keep, and cage the other for a day or two when you unite the bees. In this way you will not be taking any chances and will probably succeed without getting any bees killed.

At that time of the year the bees are valuable for the colony and it is worth while to save all that you can.

TRANSFERRING

I have several stands of bees that originated from a stray swarm that I hived three years ago. The first two years they were very easy to handle, but last year they were so vicious no one could go anywhere near them; even the children going to and from school along the road would be attacked by them. They stored a nice lot of honey. They seem to be good workers, but awful mean, so I thought I would introduce some good Italian queens to see if I can change their disposition. There are two colonies in old box-hives, which I am going to change to standard hives.

1. What I want to know is, how soon this spring I can transfer them and how early it would be advisable to introduce the new queens, and how long after the new queens have been introduced before all of that mean disposition will be bred out of them.

I would also like your advice on hiving a swarm of bees that are in our school house. The school building is made of brick with wood window frames, and the bees go in under one of the windows, so I am sure they are in the hollow place around the window frame. I don't care anything about the honey, but I want the bees. Please tell me how to go about this and when would be the best time.

I notice by the Journal that you publish a pamphlet, "Every Step in Transferring Bees." I would like to have a copy of it. Please let me know the price of same.

KANSAS.

Answer—1. The proper time to transfer bees is during fruit bloom, as there is less honey in the hive than at any other time and yet the bees are making some honey. The introducing of the new queen is all right at any time when you can get a queen. But as you have to catch the old queen in order to introduce the new one, it is best to wait until transferring time. It will take about two months before the mean disposition of the colonies is cancelled, and in fact it is a little longer than that before all the old bees are gone. Those colonies must have been mishandled to render them cross.

2. A colony in a house can be transferred out of it in the same way that you transfer out of a box, but usually with more difficulty, owing to the position of the swarm. One cannot give advice without knowing just where they are located and how they can be driven out.

The pamphlet about transferring bees can be sent on receipt of the amount, 10 cents.

MEETINGS AND EVENTS

Current association meetings and organization notices are published in this department each month. Secretaries and other officers of organizations who wish publicity here should make sure that notices are sent in before the fifteenth of the month preceding publication. Frequently notices are received too late for use and consequently do not appear at all.

The American Honey Producers' League Meeting

A most enthusiastic session of the American Honey Producers' League was held in Milwaukee, February 4 to 6, in the Hotel Schroeder. Combining the meetings of the American Honey Producers' League, the American Honey Institute, the Bee Industries Association of America, and the Association of Apiary Inspectors of America, it brought together a very representative body of people from twenty-two different states and from the province of Ontario in Canada.

Enthusiasm was exhibited from the first day's session, which comprised meetings and discussions of the American Honey Institute. The proceedings of the Institute as well as their plans will be found in other columns of this magazine.

The program of the American Honey Producers' League was particularly impressive. It would be difficult to give even a resume of the valuable papers or the talks.

Dr. Barnard, President of the American Honey Institute, and Miss Fischer, his assistant, naturally took an important part in the League meeting because everyone was interested in learning exactly what the Institute is doing and the ramifications of their program.

One of the most outstanding talks was that delivered by Dr. F. W. Schultz, chief of the Department of Pediatrics of the University of Minnesota, on "Possibilities of Honey in the Field of Nutrition." Dr. Schultz left in the minds of his hearers the great desirability of having some really authentic and official work done on this very problem. For many years beekeepers have claimed that honey is a most healthful and nutritious sweet. While we have this opinion in our own minds, to sway public opinion, particularly that of specialists and physicians, we must have definite facts based on experiments and results.

The Ontario delegation furnished talks both by their President, F. W. Krouse, and by W. A. Weir, Secretary of the Ontario Honey Producers' Cooperatives, who reported their methods of marketing. The extreme interest of the Ontario delegation in the American Honey Institute and the American Honey Producers' League, and their desire to cooperate in every way possible, led to a de-

cision of the Board of Directors of the League to schedule the next meeting for Toronto, Ontario. There were some thirty-one cities extending invitations to the League for its next meeting.

The reports of Mr. A. W. B. Kjosness and of O. A. Lende of the Mountain States Honey Producers' Association gave in detail some of their work with honey pools, bonded warehouses, intensive marketing in local areas, and exporting of honey.

A large number of resolutions were passed, important ones being against the corn sugar bills; one recommending the sending of James I. Hambleton of the Bee Culture Laboratory to Germany for a fuller understanding and discussion of the regulations in Germany concerning the diastase property of honey; one for the recommendation for \$20,000 to the Bee Culture Laboratory for field agents to work on problems in different sections of the country; another for an appropriation of \$12,000 for the Department of Markets to establish complete service on both honey and beeswax.

The meetings of the state and local inspectors were also productive. The main idea seemed to be a co-ordination of effort throughout the United States and a desire to have more uniform laws between states as well as more uniform methods of procedure. Committees were appointed with these objects in view. The inspectors, some twenty in number, represented states all the way from California, with Mr. Todd, to New Jersey, with E. G. Carr. More and more the attitude of the inspectors was to make a complete job of cleanup work by burning, after proper time has been left the beekeepers to do their own cleanup.

New officers of the League for the ensuing year included M. C. Tanquary, President; Frank Rauchfuss, Vice-President, and James Gwin, J. M. Cutts, Carl F. Buck, and T. W. Burleson, Directors.

As stated previously, the next meeting is to be held in Toronto, and preferably in conjunction with the American Honey Institute and the Apiary Inspectors' Association.

Not a small part of the enthusiasm of those assembled was furnished by the very creditable honey exhibits in charge of Mr. James Gwin, with Rev. Francis Jager as judge of exhibits. There were some fifteen

exhibitors with honey which might well have done credit to some of the big fair exhibits.

The honey banquet had as its toastmaster Judge Barr, whom many of our subscribers already know.

As important and enthusiastic as the meeting was, we believe the most important part of all, or at least the part which appealed particularly to those in attendance, was the association of beekeepers from widely scattered parts of the United States. This gives an opportunity not only to know your neighbor, but to understand his problems and to be able to cooperate in a far better way than could otherwise be possible. One thus alone profits by the experiences of others, applying them to his own problems.

The League has gone on record as favoring either a large field meet each summer or several regional field meetings to cooperate with associations for which the winter meetings are more of an official procedure. Decision as to where such meetings should be held during the summer of 1930 was left with the Board of Directors.

We hope in future issues of the American Bee Journal to be able to give some of the papers which were presented at this meeting.

North Dakota Meeting at Fargo

At the recent meeting of the North Dakota Association at Fargo, T. M. Manchester, of the Manchester Biscuit Company, gave considerable encouragement to honey producers in his report of the extent to which honey is used in bakery products. According to Mr. Manchester, honey used as a sweetener keeps these products moist and fresh for a longer period than when sugar alone is used.

Dr. J. H. Shepperd, acting President of the North Dakota Agricultural College, in his address, "Pedigreed Bees at Last," discussed the method of controlled mating developed by Dr. Lloyd Watson at Cornell University. Dr. H. L. Walster, Dean of the School of Agriculture, reviewed the field of beekeeping literature and stressed the importance of keeping a good library.

Other speakers were C. B. Waldron, on pollination of fruit; J. W. Beatty, manager of the Red River Valley Apiaries, on the spring care of bees; Frank C. Pellett, Field Editor of the American Bee Journal, on honey production in the Northwest; Hon. J. A. Kitchen, Commissioner of Agriculture at Bismark, traced the development of the beekeeping industry up to the present time; W. W. Remington spoke on cooperation; Charles Hausmann, of Hillsboro, on his experiences in package bees compared with over-wintered colonies.

YOUNG TESTED WINTERED QUEENS \$1.00 EACH—READY NOW

Untested queens ready April 1
Send the order, get the queens, save the colony

D. W. HOWELL, Shellman, Ga.

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AND GET HONEY—THEY SATISFY

PACKAGES AND NUCLEI

The kind WE use in our extensive Michigan Apiaries where WE produce honey by the car load.

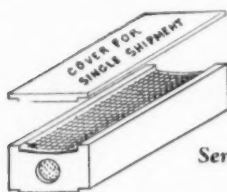
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Service guaranteed. Stock bred for honey getting and gentleness. PRICES RIGHT. Let us name you prices on any quantity.

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QUEEN BEE
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DIEMER'S BRIGHT ITALIAN QUEENS

By Return Mail
\$1.00 Each.

G. G. DIEMER
Excelsior Springs, Missouri

Palmetto Quality Queens

Am booking orders for spring delivery at following prices: One queen, 60c; six, \$3.50; dozen, \$6.75; \$50.00 per 100. Insure your honey crop by using Palmetto Queens. Rear three-band Italians only. Special prices on queens for summer requeening. Quality at a saving. No disease.

C. G. ELLISON, BELTON, S. C.

Latham's Queens
"She-Suits-me" Queens
are line-bred three-banded
Italians

This strain of Italians is unsurpassed in tongue-length and also in nectar gathering

1 untested laying Queen 80 cents
6 for \$4 50 for \$31

Allen Latham
Thorwicktown
Conn.

Season May 20-June 1

Prof. B. V. McCaul, Department of Agricultural Economics, outlined record costs for beekeeping. W. F. Boylan, of Carrington, gave interesting sidelights on the history of beekeeping in the development of man. W. O. Victor, of Chaffee, spoke on the type of container for honey. Most of his honey, he states, is packed in 60-pound cans and shipped to eastern markets. For the local trade, however, he finds that the 5- and 10-pound tin pail, properly labeled, is the most satisfactory container. W. H. Magill, of Fargo, gave an interesting talk on the development of beekeeping equipment.

A report of apiary inspection showed that 10,128 colonies had been inspected in twenty-eight counties for the year of 1929.

Officers elected for 1930 are: W. F. Boylan, President, Carrington; W. O. Victor, Jr., Vice-President, Chaffee; J. A. Munro, Secretary-Treasurer, Fargo; and for Directors, Ralph G. Smith, Amenia; J. D. Beals, Dwight, and Paul Johnson, Callo-way, Minnesota.

The Association pledged support to the American Honey Producers' League and the American Honey Institute.

New State Association in Kentucky

The Kentucky State Beekeepers' Association was reorganized Thursday, January 30, at a meeting and short course held at the University of Kentucky. This meeting was in conjunction with the Farmers' Week program of the College of Agriculture and was attended by approximately sixty beekeepers, orchardists and others interested in bees. G. W. Hurst, of Flemingsburg, was made President; Lander Skinner, of Winchester, Vice-President, and W. A. Price, State Entomologist and head of the Department of Entomology and Botany at the Kentucky Agricultural Experiment Station, Secretary and Treasurer. The constitution and by-laws of the old organization were readopted.

Dr. V. G. Milum, Secretary of the Illinois State Beekeepers' Association, assisted in the program, giving three talks during the day, on winter management, on spring management, and on treatment of bee diseases. Professor Price spoke twice during the session, describing the anatomy of the honeybee and the causes of bee diseases. D. C. Babcock, of the A. I. Root Company, met with the Association, speaking during the afternoon.

Ben Niles, Secretary of the Kentucky State Horticultural Society, brought greetings from that Association and pledged the assistance of the fruit grower in efforts to further the interests of the bee industry in the state.

Resolutions condemning the Capper-Cole corn sugar bill and urging the need of legislation for the combatting of American foulbrood were passed. This is the first meeting of the beekeepers held since 1919.

The Iowa Convention

The Iowa beekeepers held their annual convention this year immediately following the short course at the College of Agriculture. The attendance and interest were good. During the short course, special attention was given to problems of disease control. A. P. Sturtevant, of the Government Field Station at Laramie, Wyoming, and T. W. Burleson, of Waxahatchie, Texas, were the outside speakers for the short course. Marketing received special attention during the sessions of the convention, with Francis Jager and O. A. Lende, of Minnesota, as the speakers from outside the state.

Sturtevant gave an extended account of investigations looking toward the control of the spread of American foulbrood. With reference to the agitation for the certification of honey, he stated that with present facilities there is no practical method of putting such certification into practice.

There was much interest manifested in the address of Mr. Lende concerning the work of the Mountain States Honey Producers' Association in their effort to control the surplus and stabilize the market. With proper support, success appears to be in sight.

Mr. Jager reviewed the history of the corn sugar bill and told of the recent discussion at the meeting of the Minnesota Farm Bureau Federation, when a resolution was adopted opposing the passage of the bill.

Corporation Planned at San Antonio Meeting

At a state-wide meeting held at San Antonio attended by beekeepers representing about 10,000 colonies of bees, a temporary agreement was reached to organize a state marketing association, contemplating the opening of advertising and sales quarters in San Antonio March 1 to handle the sale of the 1930 crop.

Permanent success will depend on signing up a minimum of 35,000 colonies for the 1930 pool. There are approximately 425,000 colonies of bees in Texas, according to the best estimates, which produced in 1929 about 10,000,000 pounds of honey. H. B. Parks, chief of the State Apicultural Laboratory at San Antonio, stated that beekeepers had found it necessary to form a cooperative because for the last three years it has been difficult and at times impossible to find markets for the honey.

The principal aim of the new organization will be to stabilize the production, price, and pack of honey. All of the honey produced by the members will be pooled and placed on the market on dates agreed upon and assigned to different varieties produced.

A membership fee of \$2.50 was adopted from beekeepers whose colonies are honey producers, and an added fee of 10 cents for every other colony to be paid by all members. There will be no annual dues. H. E. Coffey, of Whitsett, was named chairman of the Membership Committee to secure the required enrollment for perfecting a permanent organization.

The schedule of pools as now agreed upon is as follows:

Guajillo—Catsclaw, from southwest Texas, April 25 to July 1. This is the most famous and the earliest of the Texas varieties, and has always commanded the highest price.

Horsemint—The largest producer, with pool dates from May 15 to September 1.

Mesquite—The third largest producer of fine quality honey, but irregular. Pool dates same as horsemint.

Cotton, of the black land cotton district—Pool dates July 1 to November 1.

East Texas—A variety which represents a large area of the state's crop. Pool dates June 15 to November 1.

Several other pools will be formed and announced during the season to suit local conditions.

W. H. M.

Cook-Du Page Beekeepers Hold Annual Meeting

Prof. R. H. Kelty, State Apiculturist of Michigan, talked to an enthusiastic audience at the annual meeting of the Cook-Du Page Beekeepers' Association at the Bismarck Hotel, Chicago, on the evening of February 6. His subject was "The Relation of Beekeeping to Horticulture in Michigan" and was illustrated with some excellent lantern slides bearing witness to the benefit of bees in pollination.

Officers elected for 1930 were: A. D. Boal, President; E. J. McCormick, Secretary-Treasurer, and William Bigel, Ed Groh, Adam Bodenschatz, C. L. Duax, and Miss Anna Krier, Vice-Presidents. There were about sixty members present.

Out of the state visitors were W. A. Weir, Secretary-Treasurer of the Ontario Honey Producers' Cooperative, and Herbert Link, of Indiana.

A. D. Boal, Secretary.

WILLIAMS' BEES produce a profit where many others fail. We will be glad to have you compare them with any other bees.

They are bred for honey gathering, disease resistance and gentleness.

Two-pound packages with select Italian queen \$3.50; ten or more, \$3.25; three-pound packages \$1.00 per package higher.

P. M. WILLIAMS, Mount Willing, Alabama

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For thirty years we have specialized in the manufacture of **Sections** from the whitest selected Wisconsin basswood

We also manufacture hives, supers, frames and shipping cases

Write for our free illustrated catalog

Marshfield Manufacturing Company
Marshfield, Wisconsin

Use Pettit's Package Bees—They Satisfy

Each fall "decrease" is made in The Pettit Apiaries of Canada to save re-queening and wintering. Their combs are re-stocked with Pettit's Package Bees from Georgia and it pays.

Pettit's Package Bees are sold to queen breeders for early nuclei, to fruit growers for their blossoms, and to honey producers for strengthening weak colonies as well as for increase. They have satisfied many in all parts of Canada and the U. S. A. including such prominent men as Hon. J. D. McGregor, Lieutenant-Governor of Manitoba.

Our queen breeder is paid a bonus for supplying only superior queens. Our management of colonies gives the highest percentage of young bees for shipping. Our packages are filled to guarantee full weight of bees on arrival.

Besides the standard 2-lb. and 3-lb. package we supply 4-lb. and 5-lb. packages. Also for fruit growers a combless hive and package combination either with or without frames requires no beekeeping knowledge whatever. Correspondence invited.

Prices based on 2-lb. combless package with queen. For larger sizes add \$1.00 per pound. Queenless bees in any package 80c less. 3-12 2-lb. packages \$3.25 each; 15-48, \$3.00 each; 51 on up, \$2.75 each.

Satisfaction guaranteed. Payment before shipping date. Shipment any time you say. Dates reserved as ordered. Shipments made as promised. We don't get the blues when it rains. Shipping goes on just the same.

There is friendship in business. Every order we fill carries with it our reputation as well as our guarantee. Aside from the dollars and cents we like to feel that our customers appreciate Service. Delivery when promised, which in a package business is worth as much as the bees themselves. That is how we make friends and keep them, and that is the foundation on which our business is built.

MORLEY PETTIT, Valdosta, Georgia, U. S. A.

YANCEY HUSTLERS—In Packages

Beautiful Three-band Italians—Record Honey-makers

Book your order now for spring delivery; no advance payment required.

Prices and full particulars on request.

We guarantee to please you.

CANEY VALLEY APIARIES, Bay City, Texas
YANCEY BROS., Owners

GOLDEN BEES AND QUEENS

Ready for shipment about April 1

Beautiful, gentle and good honey gatherers.

Delivered Prices on Package Bees via Parcel Post or Prepaid Express

2-lb. package, including young laying queen \$4.00
3-lb. package, including young laying queen 5.00
Ten packages, either size, 25c less each. Write for large quantity prices.

QUEENS

Select (one grade only), one, \$1.00; ten, \$9.00; twenty-five or more, 80 cents each. Tested, last fall rearing, \$1.50 each.

We have special made, safe introducing queen cage in which safe introduction is guaranteed, even to a laying worker colony. The price is 50 cents additional per queen when sent in these cages.

No disease. Health certificate.

THE GOLDEN APIARIES Letohatchie, Alabama

John T. Knight, Mgr.

MACK'S QUEENS

are the most scientifically reared queens to be found in America. High Quality queens at quantity prices our aim and achievement. A postal will bring our prices for 1930.

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My "Buying Service" FOR FARM WOMEN

will help you fill your place with HARDY Fruits, Shrubs and Flowers at a great saving in initial cost. For example I will send you POSTPAID this spring

25 Japanese Barberry Shrubs

2 years old, 8 to 15 inches tall, for ONE DOLLAR. This variety does not carry the spores of the grain rust. It is well suited for foundation and single specimen planting as well as for making a quick and permanent Ornamental Hedge. Leaves are a snappy bright green during growing season, turning to brilliant shades of orange and scarlet after first frosts. Clusters of yellow flowers appear in late spring, followed by bunches of bright red berries which remain on bushes all winter. Send in your order soon and I will include 12 "SURE TO BLOOM" Gladiolus bulbs with your shipment. FREE. Address Alys Johnston, "A BUYING SERVICE" for Farm Women, Box 39, 167 Cherry St., Elgin, Illinois.

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Package Bees
and Queens

Write for Prices

J. ALLEN, Catherine, Alabama

PACKAGE BEES ITALIAN QUEENS

Write for Price List

W. A. WHITMIRE, Milton, Fla.

Doings in the Northwest

By N. N. Dodge

January Fires Cause Damage to Beekeeper

For the first time in recorded history, the Washington Forest Fire Association employed a force of men to fight fire during the month of January. During the period of severe cold weather, lasting throughout the month, three forest fires were reported in western Washington, the largest burning over an area of 7,650 acres. Among those suffering losses from the blaze was George Steel, honey producer of Cedar Falls, whose house, buildings, and apiary were entirely destroyed. Attempts to fight the fire were hampered by the extreme cold, which interfered with trucks bringing men and equipment and prevented the use of water because of the frozen condition of the streams.

Northwest Well Represented by League Officers

In the election of officers of the American Honey Producers' League, convening at Milwaukee, Wisconsin, the Northwest was well represented for the coming year. Mr. Frank Rauchfuss, manager of the Colorado Honey Producers' Association, of Denver, Colorado, was re-elected Vice-President, and Mr. Floyd Buck, of Walla Walla, Washington, was placed on the Board of Directors.

Western Washington Meeting

On January 8 and 9 the Western Washington Beekeepers' Association held its annual meeting of members in Seattle. Mr. A. W. B. Kjosness, manager of the Mountain States Honey Producers' Association, attended the meeting and at the banquet on the evening of the eighth gave a most interesting talk on the trials and hardships endured by the big cooperative in becoming established.

Rauchfuss' Report on Colorado Territory

Mr. Frank Rauchfuss, manager of the Colorado Honey Producers' Association, makes the following report of conditions in the territory covered by his Association:

"There is very little to say relative to conditions of how bees are wintering. We simply do not know. We have had zero weather off and on, most of the time ON, ever since January 1. Ground is frozen quite deep in most places in the intermountain region and temperatures have been down to record depth: 52 below at Saratoga, Wyoming, 50½ below at Worland, 30 below in the lower

portion of the Platte River in Colorado, and no one knows how they are wintering. They are alive yet, but that does not say very much, because they may be so exhausted by their efforts in keeping themselves warm that they will not have much vitality left, but we are certainly hoping for them to come through in fairly good condition.

"There is not very much honey in producers' hands, so far as we can find out, but our Association has sufficient stock on hand yet to keep us going, taking care of orders that will come from now until the new crop comes on. This past month has been, as usual, a very quiet one for selling honey."

Cold Spell Breaks January 28

The break in the cold spell which held the Northwest in its grip during the month of January came on January 28, and within a few days was quite general over the Pacific Northwest region. Beekeepers from many sections report that the bees had a fine cleansing flight on January 29. Pussy willows are already putting in an appearance in the beekeeping districts along the coast of Washington and Oregon, and the bees should soon be gathering nectar and pollen from this source if the weather remains mild.

Spray Injury Growing Serious

Death of field bees occasioned by arsenical poisoning from sprays used in fighting the codling moth larvæ in Yakima and Wenatchee Valleys in central Washington is becoming more serious from year to year, and is a menace to the beekeeping industry in the fruit growing regions of the Evergreen State. Dr. R. L. Webster, State Entomologist, with headquarters at the Washington State College, Pullman, Washington, is making every effort to perfect an oil spray which will be effective for codling moth larvæ control and yet be harmless to honeybees. Experiments performed in the past have shown a combination of oil and lead arsenate or oil and nicotine sulfate to be reasonably satisfactory. The Western Cooperative Oil Spray Project has been the organization carrying on much of the experimental work with oil sprays, and is composed of members comprising the experimental stations of California, Idaho, Montana, Oregon, Washington, and British Columbia, and the United States Department of Agriculture.

Crop and Market Report

Compiled by M. G. Dadant

For our March issue we asked crop reporters to answer the following questions:

1. Honey plant and bee conditions.
2. How much honey left on hand?
3. Is honey moving readily?

HONEY PLANT AND BEE CONDITIONS

Throughout the entire North, there has been a satisfactory amount of snowfall during the winter to assure honey plants coming through in good condition into the early spring months, except in a very few localities where the ground is still bare. However, these are the exception rather than the rule. In general, in the eastern and central western areas honey plants were fairly numerous in the fall, so that the prospects appear perhaps just a little above ordinary, provided the early spring freezing and thawing does not heave up the clover plants too badly.

In the southeastern sections of the country, prospects are above what they were in 1928 considerably. Texas similarly reports improved conditions, although hard freezes in some sections have damaged the honey producing plants.

In the intermountain territory and northern plains states, snows have also been heavy. It is too early, however, to judge of how the honey plant conditions will be, although it is not to be doubted that they will be at least the equal of last year because of the desirable amount of snow for irrigation purposes in many districts. Prospects are normal in northern Pacific states and above last year in California. Some reporters estimate that there has been about half the rainfall needed for producing a normal crop of honey in southern California. Recent reports are that more rain has fallen, although not sufficient yet to guarantee enough moisture for the honeyflows. California evidently will not have a bumper crop, but should have far in excess of last year with normal rainfall during the rest of the spring.

As to condition of bees, these appear to be above normal in the southern sections of the country except, perhaps in New Mexico and certain parts of Arizona.

In the northern sections there has been extremely cold weather, dropping as low as 50 degrees below zero in some parts of the intermountain territory. The cold, however, has not been so prolonged as it was during the same period last year, and we do not anticipate the country over that the losses are going to be as heavy as they were in the spring of 1929. There is undoubtedly going to be a shortage of stores in some sections, but not, we believe, as pronounced a shortage as there was last year.

All in all, our estimation would be that the prospects for the bees and for the honey plant conditions are above normal, with still some doubt as to just how bees will come through.

The Canadian provinces all report ample snow and prospects very encouraging for the 1930 season.

HONEY ON HAND

In practically all of the sections of the country, honey is pretty well disposed of, with perhaps the heaviest carryover for the East to March 1 in the states of New York and Pennsylvania. The entire Southeast seems to be well cleaned of honey, except Florida, which is still carrying over some of its 1928 crop, but in a less amount than was true a year ago. Texas, which reported slow sales earlier, seems to be disposing of the entire crop satisfactorily. Several cars have been shipped abroad and this has somewhat relieved the pressure. Prices are not satisfactory, since they are lower than a year ago, but the redeeming feature is that honey has moved. Perhaps the central western states are suffering most from a carryover. Michigan reports probably 30 per cent more still in the hands of producers and there are num-

bers of distressed lots in many other sections in the central west. Iowa and Missouri seem to have disposed very nicely of all their honey except in some eastern sections of Iowa.

The Dakotas and Minnesota are well disposed of their honey except in the Black Hills of Dakota, where there are still a few large lots to dispose of.

In the intermountain territory, conditions seem to be satisfactory, although the Mountain States Cooperative is holding honey on hand, but in not sufficient amounts to warrant any worry.

In Washington, all local honey has been disposed of and car lots are being imported. Oregon still has considerable honey on hand, but in California the crop is gone and importations are being made from the intermountain states. Similar conditions exist in Arizona.

All in all, we would anticipate that there is perhaps a little more honey left over than there was at this same time last year and the demand is probably not quite so good.

The Southeast and in fact the entire South shows considerable improvement over last year. The East is equally as well cleaned up as in 1929 and the bulk of the distressed lots seems to be in the central western territory. We believe that part of this is caused by the fact that less than car lot beekeepers have not been so inclined this year to make an effort to dispose of their crop locally, but have depended more upon the general market, perhaps assuming that the agitation on the part of the Honey Institute and other agencies as well as the work of the cooperatives would place them in a position to dispose of their honey without such effort.

While such conditions would be highly desirable, it does not appear yet that conditions have improved so that the local beekeeper could afford to ignore his local markets, which are not handled in any other way as yet. In a few years it may be that all markets will have access to supplies of honey shipped in, but this does not seem so at present, and it would appear that in the area of small producers, at least, there should be an extreme effort made on the part of these small producers to sell as much honey as possible; not merely to sell, but to try to create a demand on the part of the consumer. We do not believe that beekeepers are making the efforts they did a few years ago to create consumer demand for honey, and we all know that other food products are doing this very thing.

HOW IS HONEY MOVING?

Honey is not moving very fast. In fact most of the reports coming in were to the effect that honey is moving slowly, but in a much better fashion than a month ago.

We were much surprised to learn from one of the large distributors that honey movements are disposing themselves more over the whole year than was so ten years ago and thus making for a more equal demand. Their suggestion was that, although honey is not moving readily now, the movement is going to continue and perhaps expand during the next month or two and be followed by a steady demand during the late spring and even into the summer months.

This is a highly desirable feature. In the first place it shows that consumers are using honey the year around, and in the second place it shows that such markets are being supplied the year around, thus obviating the necessity of the consumer, who desires sweets, to go to some other sweet in the absence of honey.

Several reporters stated that their markets were entirely bare of honey and that more could be used if such honey was available. However, the reporters themselves did not care to go into the distribution of honey.

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AMERICAN BEE JOURNAL

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References: 1st National Bank, R. G. Dun or
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BEEES AND QUEENS

TWO THOUSAND two- and three-pound packages of young pure three-banded Italian bees and queens for shipment April and May, 1930. Write for prices. W. D. Achord, Fitzpatrick, Ala.

CAUCASIAN QUEENS for 1930 from imported mothers. One, \$1.50; six, \$7.50; twelve, \$14.00. Eighty-five per cent pure mated. Safe arrival and satisfaction guaranteed in U. S. A. and Canada. Tillery Bros., R. 6, Greenville, Ala.

PACKAGE BEES AND QUEENS—Let us quote you prices that will save you money. Thomson & Hodges, Cottonwood, California, and Coeur d'Alene, Idaho.

YOUNG Italian queens and baby bees for your 1930 requirements. The price is right and it costs you nothing to book your order. One two-pound package with queen, \$3.25; ten, \$3.00 each; twenty-five, \$2.85 each; one hundred, \$2.75 each. Three-pound packages, \$1.00 each more. Good, heavy packages, shipped when you want them. No disease. Safe arrival guaranteed. The Stover Apiaries, Tibbee Station, Miss.

FOR SALE—Hundreds of package bees with Italian queens for April and May delivery from our thousand colonies. They will please you. In professional bee business here since 1905; twenty years' experience with package bees. Allenville Apiaries, Eggeman, Prop., Allenville, Ala.

GOLDEN ITALIAN QUEENS—Producing large, beautiful bees, solid yellow to tip. Circular and price list for spring ready. Dr. White Bee Company, Sandia, Texas.

A SPECIAL orchard pollinating package. Two pounds of Italian bees on two good standard Hoffman frames brood, bees and honey. An Italian queen, spring raised and introduced and laying as she comes to you; hole bored and corked in package, ready to set in orchard or hive stand and let go to work. Twenty years' experience as shipper and buyer of packages convinces me this is the best buy on the market today. Price, \$5.50 single package. Terms, one-fifth down for April and May delivery, f. o. b. Kenner. Prices on combless packages on request. No disease; health certificate attached. All shipments in regular approved standard packages. Six main line railroads to ship over. All queens raised by me in person; all packages put up by me personally. Have moved my apiaries back to the location Louisiana reconstruction apiaries in the best beekeeping territory in South. Reference, any bee publication in U. S. Look me up when in New Orleans personally. Queens in season, \$1.00 each. Jes Dalton, Kenner (in suburbs of New Orleans), La.

FOR SALE—Two pounds bees and young Italian queen, \$2.50. Health certificate furnished. Satisfaction guaranteed. Write J. L. Leath, Corinth, Miss.

MY CHOICE queens by return mail. Three-banded Italian queens, each, \$1.00; six, \$5.00. Tested, \$1.50 each. Jul. Buegeler, Alice, Texas.

Advertisers offering used equipment or bees on combs must guarantee them free from disease, or state exact condition, or furnish certificate of inspection from authorized inspector. Conditions should be stated to insure that buyer is fully informed.

REACROFT Italian bees that please. Select queens: one, 1.00; ten, \$9.00. Two-pound package, \$2.50. Circular for quantity prices. George H. Rea, Reynoldsville, Pa.

BUY your queens from Allen Latham, Norwichtown, Conn.

ITALIAN bees and queens. Booking orders now. Two-pound packages, \$3.00; selected queens, 75c each, any number. G. H. Merrill, Greenville, S. C.

PACKAGE bees and queens. We have over 4,000 colonies of bees in two localities, which assures you dependable service. Twenty years' experience rearing queens, and are reared where there is an abundance of pollen. Two-pound packages with queens: 10, \$2.60; 25, \$2.55; 50, \$2.50; 100, \$2.45 each. Three-pound packages with queens: 10, \$3.45; 25, \$3.40; 50, \$3.35; 100, \$3.25 each. Highest quality young select three-banded, untested Italian queens, 75c each, any number. Delivery and quality guaranteed. Shipping points, Chico and Tracy. Koehnen Apiaries, Glenn, Calif.

NONE BETTER than our seasonably reared Italian queens; \$60.00 per hundred. Write for circular. Stearns Bee Company, Brady, Texas.

WE appreciate your past business and solicit your queen and package business for this season. Prices on application. Louisiana Southern Bee Farm, R. 2, Baton Rouge, La.

GOLDEN Italian queens for 1930. The big, bright, hustling kind (the kind that get the honey). Satisfied customers everywhere. Untested, \$1.00 each; six, \$5.00; twelve, \$9.00; \$65.00 per hundred. Tested, \$1.50 each. Two-frame nuclei or two-pound packages, \$3.25 each; ten or more, \$3.00 each. Safe arrival guaranteed. Health certificate furnished. E. F. Day, Honoraville, Ala.

GOLDEN Italian queens producing golden bees; very gentle and good honey gatherers. State inspected. Satisfaction guaranteed. Tested, \$1.50; select tested, \$2.50; untested, \$1.00; six for \$5.40; twelve or more, 80c each. D. T. Gaster, R. 2, Randleman, N. C.

IF you want gentle bees, good honey gatherers and beautiful to look at, my strain of golden Italians will please you. Prices: Untested, \$1.00; six, \$5.40; twelve to forty-nine, 75c each; fifty or more, 70c each. Tested, \$1.75 each. Circular on request. Health certificate, safe arrival and satisfaction. Hazel V. Bonkemeyer, R. 2, Randleman, N. C.

QUEENS and package bees. See large ad on page 148, this issue. W. H. Moses, Lane City, Texas, U. S. A.

Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

DIEMER QUEENS—Before June 1, \$1.25 each; after May 31, \$1.00. Write for price on quantities. J. F. Diemer, Liberty, Missouri.

PACKAGE BEES—Two pounds full weight Italian bees with select untested queen for \$2.30, and three-pound package same for \$3.10, in hundred lots. Let us send our circular. Stearns Bee Co., Brady, Texas.

PACKAGE BEES—Three-banded Italian. If you want bees that are gentle to handle, our bees will please you. Young queens and baby bees; half pound overweight in every package. Bees shipped in light, roomy cages. Syrup feeder in cage. Queen shipped inside of package bees in cage with queen on candy feed. Two-pound package with queen: 1 to 9, \$3.00 each; 10 to 100, \$2.75 each. Three-pound package with queen: 1 to 9, \$3.75 each; 10 to 100, \$3.50 each. State inspection certificate attached. Prompt delivery; satisfaction guaranteed. Little River Apiaries, Box 83, Gause, Texas.

MY BEES realized last year more than ten gallons of honey per colony, and I left on a whole super of stores for winter. I find it difficult to dispose of honey, and offer bees. Italians in packages with two frames (Hoffman) and two pounds of bees, \$4.00. A better package is the two frames with three pounds of bees for \$5.00. Each package contains a tested queen. Satisfaction guaranteed. Father Besselaar, Bordelonville, La.

GOLDEN Italian queens for sale. The same strain that has given satisfaction for over thirty years. One, \$1.00; six, \$5.00; one dozen, \$9.00. Health certificate with each queen. Satisfaction guaranteed in United States and Canada. E. A. Simmons Apiaries, Greenville, Ala.

BRIGHT Italian queens, ones that are guaranteed to please you or your money refunded. Untested, any number, 75c each; tested, \$1.00 each. Two-frame nuclei or two-pound packages, \$3.25 each; ten or more, \$3.00 each. Honoraville Bee Company, Honoraville, Ala.

THREE-BANDED Italian bees and queens. Two-pound package with young queen, \$3.00; ten or more, \$2.75 each. Three-pound package with queen, \$3.75; ten or more, \$3.50 each. Health certificate with shipment. Safe arrival guaranteed. William Piefer, Gause, Texas.

THREE-BANDED Italian queens from John Davis stock, 75c each, any number. Satisfaction assured. D. C. Jackson, Funston, Georgia.

FOR SALE

FIFTY colonies bees with new equipment, or will put out on shares and increase. Western baby chicks for sale. Dan J. Nero, Hanks, N. D.

FOR SALE—Vitex trees, one year old, running from 14 to 24 inches. Price 50c each. Will bloom this year. Seed, \$1.50 per ounce. Delivered anywhere, postpaid. Joe Stallsmith, Galena, Kansas.

FOR SALE—Highest quality queen mailing cages. Used extensively by the largest queen breeders in the South. Samples and prices on request. Hamilton Bee Supply Co., Almont, Mich.

COMPLETE apiary business for sale in Canada. Address American Bee Journal.

FOR SALE—For cash: Three hundred colonies bees located in excellent alfalfa and sweet clover location. Equipment for producing extracted honey and to make increase. Located in Wyoming; healthy climate, good educational facilities; good fishing and hunting. Reason for selling, death in family. Mrs. Harvey Whitacre, Saratoga, Wyoming.

FOR SALE—Seventeen stands Italian bees in Modified Dadant hives, with one each extracting super. Combs built on Dadant wired foundation. Guaranteed no disease. Price \$15.00 per stand. Ralph Wallace, Nitro, W. Va.

SIXTEEN colonies bees for sale. Disease free; first-class equipment, sufficient to run 25-colony apiary for comb and extracted honey. Send 10c for inventory and price of equipment. V. H. Yohey, R. 4, Muncie, Ind.

FOR SALE—80 colonies bees, ten-frame hives. Guaranteed disease free. George Pillman, Centaur Station, Mo.

EARLY HUBAM—Recleaned and scarified. Half bushel, \$6.25; bushel, \$12.00. P. Petersen, Kimballton, Iowa.

FOR SALE—100 colonies bees in good condition in two-story standard ten-frame hives with full-depth extracting supers. Most combs built on Dadant's wired foundation. Complete outfit. Write for price. Clyde P. Whitney, R. 3, Mendon, Ill.

G. F. "Doc" Wagner apiary and equipment, 68 colonies. Modified Dadant hives, 300 Modified Dadant supers and other extracting equipment. R. L. Parker, K. S. A. C., Manhattan, Kansas.

APIARY for sale. Ten acres. Thirty-eight hives of good, sound bees; equipment for 350 hives. On state road, five minutes' drive from good village. Inquire of Emil Freitag, Middleburg, N. Y.

HONEY FOR SALE

FOR SALE—White clover honey with true white clover flavor, in new 60-pound cans. By golly, it's good. Price and sample. J. W. Bittenbender, Knoxville, Iowa.

FOR the finest honey obtainable, reasonable, write Lee Horning, any time. A producer. Morrison, Ill.

COMB, extracted and chunk honey in ten sizes glass containers and 2½, 5-, 10- and 60-pound tins. Livest labels in U. S. or plain. One of our special display cases with \$25 and \$50 orders. Write for free illustrated circular showing our packages and free samples of honey. Griswold Honey Company, Madison, O., U. S. A.

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Company, 230 Park Avenue, New York.

FOR SALE—White clover honey in 60-pound cans. None finer. Satisfaction guaranteed. J. F. Moore, Tiffin, Ohio.

HONEY FOR SALE—All grades, any quantity. H. & S. Honey and Wax Company, Inc., 265 Greenwich St., New York City.

WHITE CLOVER comb honey, packed eight cases to carrier. W. L. Ritter, Genoa, Ill., DeKalb County.

MICHIGAN'S finest white clover honey; new cases. No disease. 8½ c. John McColl, Tecumseh, Mich.

FOR SALE—Clover honey, in new 60-lb. cans, 7½ cents f. o. b. Wayne. William Oliver, Wayne, Neb.

FOR SALE—Water white clover honey in new cans and cases, 8 cents pound. Virgil Weaver, Merville, Iowa.

BLACK HILLS fancy light extracted honey from sweet clover and alfalfa, in large and small quantities. Ernest W. Fox, Fruitdale, S. D.

FOR SALE—Thirty cases No. 1 white comb honey, \$4.50 case. H. M. Schultz, Waterloo, Wis.

MICHIGAN white clover honey of fine quality and flavor, in new 60-lb. cans. One case of 50. Sample furnished. Orval W. Dilley, Grand Ledge, Mich.

FOR SALE—Extra choice white clover honey, case or carload; also amber. David Running, Filion, Mich.

HONEY (comb and extracted), pure maple syrup, maple sugar and sorghum molasses. Special price to quantity buyers. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

HONEY FOR EVERY PURPOSE—We have it in any amount; light amber and white clover, basswood, sweet clover, buckwheat. Write us what you need and ask for prices. A. I. Root Company of Chicago, 224-230 West Huron Street, Chicago, Illinois.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request. Dadant & Sons, Hamilton, Illinois.

NEW CROP shallow frame comb honey, also section honey; nice white stock, securely packed, available for shipment now. Colorado Honey Prod. Ass'n, Denver, Colo.

HONEY FOR SALE—White and amber honey in 60-lb., 10-lb. and 5-lb. tins. Write for prices. Dadant & Sons, Hamilton, Illinois.

SHALLOW frame white comb honey and white extracted honey. The Colorado Honey Producers' Ass'n, Denver, Colo.

FOR SALE—Northern white, extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

NEW CROP white clover extracted and chunk comb honey. Write for sample and prices. Kalona Honey Co., Kalona, Iowa.

EXCELLENT quality white clover honey. New cans; 9c pound. Section and chunk comb priced to sell. Ohmert Honey Company, Dubuque, Iowa.

SHALLOW FRAME comb honey, also extracted. Both white, new crop, and principally from clover. L. D. Taylor, Chandler, Okla.

WHITE CLOVER honey in new 60-pound cans; comb honey in glass front cases. Edwin Krinke, Bay City, Wis.

EXTRA QUALITY clover belt white honey in 2-60 cases. Sample 15c. Carl J. Snover, 120 South Dartmouth St., Kalamazoo, Mich.

CLOVER honey, choice, ripened on bees. Satisfaction guaranteed. Case or quantity. E. J. Stahlman, Grover Hill, Ohio.

STURDEVANT'S CLOVER HONEY — St. Paul, Neb. Any quantity.

FINEST white clover honey, 8½c pound. Edward Klein, Gurnee, Ill.

WHITE CLOVER HONEY—Well ripened and of a fine light color. In new 60's at 10 cents per pound. William C. Wahl & Sons, R. 2, Williamsville, N. Y.

FORTY cases (two 60's) extracted honey offered at 7c. Amber, good flavor, 1929 crop. Granulated, never heated. Bourland Apiaries, Marathon, Texas.

CLOVER HONEY that grades white. Fall honey, light amber. New 60-lb. cans. Sample 15c. Cloverdale Honey Co., Rockport, Mo.

FOR SALE—Choice quality Michigan white clover extracted honey, case or carload. W. S. Wiggins, Muir, Mich.

CHOICE clover honey; granulated, never heated. Special price this month. Utendorfs Apiaries, Gaylord, Minn.

FOR SALE—Fine Pennsylvania buckwheat honey, 7c. None finer. Packed in new sixties, two to the case. Fuller & Fuller, Muncy, Pa.

FOR SALE—No. 1 dark comb and No. 2 clover, \$3.00 per case of 24 sections. Extracted clover, two 60-lb cans to case, 10c pound. Honey in 25-case lots 5 per cent off; 50 or more cases, 10 per cent off. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extracted white clover honey in new 60-lb. cans. E. C. Rasmussen, Exira, Iowa.

FINEST quality white clover honey in new sixties. State quantity wanted. Martin Carsmoe, Ruthven, Iowa.

CLOVER HONEY—No. 1 white; 60-lb. cans. Edward Hassinger, Jr., Greenville, Wis.

CHOICE white clover honey. Any quantity. Sample 10c. Ralph E. Blackman, Portland, Mich.

FOR SALE—Choice extracted white clover honey in 60-lb. cans and 10-lb. pails. Also amber honey. Write for prices, stating quantity wanted. Sample 10c. Emil J. Baxter, Nauvoo, Ill.

CHOICE clover extracted, in 60-lb. cans; a carload or less. State amount you will need. D. R. Townsend, Northstar, Mich.

HONEY AND BEESWAX WANTED

WANTED—Car lots of honey. State quantity, shipping point and price. Mail sample. Hamilton, Wallace & Bryant, Los Angeles, Calif.

WANTED—A car or less quantity of white honey in 60-lb. cans. Mail sample and quote lowest cash price for same. J. S. Bulkley, 816 Hazel St., Birmingham, Mich.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5 cents a pound for wax rendering. Fred W. Muth Company, 204 Walnut St., Cincinnati, Ohio.

SUPPLIES

COMB FOUNDATION—Note these prices on twenty-pound lots: Medium brood, 64c; thin super, 74c. Can furnish the new non-sagging foundation. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

MAKE queen introduction sure. One Saftin cage by mail, 25c; five for \$1.00 Allen Latham, Norwichtown, Conn.

FOR SALE—We are constantly accumulating bee supplies, slightly shopworn; odd sized, surpluses, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it. Dadant & Sons, Hamilton, Illinois.

SAGGED COMBS are result of slackened wires caused by wires cutting soft wood of frames. Use metal eyelets. Per 1,000, 60c. Handy tool for inserting eyelets, 25c. Postage 3c per 1,000. Superior Honey Co., Ogden, Utah.

BEST QUALITY bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly. The Colorado Honey Producers' Ass'n, Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so, send us a list. American Bee Journal, Hamilton, Ill.

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Sistema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price \$1.00.

USED comb honey supers complete, eight-frame, 3¼x5x1½. Plain, very cheap. Ohmert Honey Co., Dubuque, Iowa.

NEW SUPPLIES—Standard ten-frame hive bodies and comb foundation. Never unpacked. Overstocked. Priced to sell. Faulconer Bros., Lewistown, Mo.

DADANT'S Wired Foundation, medium brood 8 9/16x16 1/8 in 50-lb. boxes; \$34 per box. Longfellow Bros., Hallowell, Me.

Additional Classified Advertisements
Continued on Following Page

CLASSIFIED ADVERTISING (Con'd)

SUPPLIES (Con.)

WIRED FOUNDATION, "Canco" cans, Bee-ware, at factory prices. Ten per cent discount on long top bar Hoffman frames. Write for our latest catalog. Send your orders to B. F. Smith Jr. Co., Fromberg, Mont.

BEE SUPPLIES—No. 1 quality hives, supers, frames, etc., at special low factory prices. We pay the freight. Send for free catalog today. Schmidt Bee Supply Co., R. 2, North St. Paul, Minn.

HIVE STANDS—While they last, ten for \$2.25. Frame nailing device, \$1.50 value, 65c. Solar wax extractor, regular \$14.00, now \$8.00. Doolittle feeders, k. d., 18c. Other bargains. Write for catalog and bargain list. St. Louis Apiary Supply Co., Commercial Bldg., St. Louis, Mo.

WANTED

WANTED—Comb foundation rolls. Address Hickok, 23 S. Division Ave., Grand Rapids, Mich.

WANTED—To begin about March 1, a strong, clean, healthy young man of some experience to help operate 500 colonies of bees for extracted honey. Write fully, first letter. A. W. Bulay, Livingston, Texas.

WANTED—300 colonies priced with 8c honey. Edward Klein, Gurnee, Ill.

WANTED—Able-bodied, experienced bee man for coming season. Apply to B. F. Smith Jr. Co., Fromberg, Mont.

WANTED—One experienced man and one helper in extensive honey production. Must be willing workers with good habits. State age, height, weight, experience, if any, and wages expected with board, and give references. Schultz Honey Company, Ripon, Wis.

WANTED—To purchase 50 to 100 colonies of bees, with equipment, in northern Illinois or southern Wisconsin. Give full details first letter regarding equipment and price. Bert Cushman, 1420 Farwell Ave., Chicago, Ill.

WANTED—Experienced bee man to take full charge of my 300 colonies April 15 to October 15. Must be strong, willing and reliable. Would prefer one with experience in sweet clover districts. I have one of the best bee locations in the U. S. Splendid bee equipment and new, modern honey extracting house. Explain fully in first letter, giving references, wages expected, etc. Conrad Hertsgaard, Kindred, N. D.

WANTED—Experienced helper for coming season. Must have good habits and be physically able and willing to work. Give particulars and references, also wages expected, in first letter. C. S. Engle, 1610 Fourth Ave. South, Fargo, N. D.

WANTED—Package bees for extracted honey. A. G. Kuersten, Burlington, Iowa.

EXPERIENCED BEE MAN—Operating two thousand colonies. Must be sober and trustworthy. Write fully in first letter, experience qualifications, age, and wages expected. Stahmann Apiaries, La Jara, Colo.

WANTED—Reliable young man, with good habits, for coming bee season. Board and room furnished. Give references, age, experience and wages expected in first letter. N. L. Stevens & Son, Venice Center, N. Y.

WANTED—One experienced man and one helper for my extensive apiaries in Michigan and Alabama. Must be willing workers with good habits. State age, weight, height, experience, if any, and wages expected with board, and give references, all in first letter, or expect no reply. David Running, Sumterville, Ala.

MISCELLANEOUS

PLANS for poultry houses; 150 illustrations. You need this book. Write for free offer and sample copy of "Inland Poultry Journal," 51 Cord Bldg., Indianapolis, Ind.

FREE—March only, one gallon white paint with \$25 order Root bee supplies. Terms cash. A. V. Small, Augusta, Kansas.

SELL IT—Honey or bees or queens or second-hand equipment or pet stock or poultry, by advertising it in *Gleanings in Bee Culture*, Medina, Ohio, with its more than 20,000 paid subscribers. Rates: 7c a word classified; \$4.20 an inch for display advertising. That great beekeeper, George S. Demuth, is editor, for whose beekeeping teachings 20,000 beekeepers subscribe.

WAX—New and safe method, in frame or out; also well drained cappings, damaged honey in frame or out, foul or not. Circular. George Pratt, 2235 Penn Ave., Topeka, Kans.

THE BEE WORLD—The leading bee journal in Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents, stamps. The Apis Club, Brookhill, London Road, Camberley, Surrey, England.

HANDY 3 in 1 feeders on your hive does away with many worries. Write for descriptive circular with cut. Address J. E. Will, Independence, Mo.

WILL TRADE Bb soprano saxophone, A-1 condition. Will trade for package bees, supplies, or cash. Write for particulars. R. L. Davidson, 310 Curtis Ave., Middletown, Ohio.

WILL exchange clear lot in Indianapolis for bees. Owner: Jessup Honey Farms, Carmel, Ind.

PREPAID—Ten assorted hardy perennials, \$1.00; ten assorted dahlias, \$1.00; eight choice iris, \$1.00. All, \$2.50. Hopkins Nursery, Withrow, Minn.

American Honey Institute

(Continued from page 115)

the crop of honey both had serious consideration and no doubt will be incorporated in the membership plan.

One of the most encouraging matters brought up was the fact that the Institute has received requests from several foreign organizations to join our membership. It is quite evident that the work of the Institute is gaining world-wide recognition. Our friends from Canada were very enthusiastic and very anxious to cooperate to the fullest extent.

Large producers' organizations, such as the Mountain States Honey Producers' Association, the Colorado Honey Producers' Association, Sioux Honey Association, as well as several of the state beekeepers' associations, are all now supporting the American Honey Institute, showing that, if the work of the Institute is brought to the attention of progressive beekeepers, it will receive their support.

It is planned to give a more complete report of the finances as well as of the membership of the Institute in another number of the *American Bee Journal*.

Early Removal from Cellar

I see that Mr. H. F. Wilson advocates leaving bees in the cellar until after April 1. On the contrary, we are taking them out much earlier than formerly. The first fine weather after March 15, out they come. In cases of delay until after April 1, the bees have suffered. Of course, we are somewhat farther south—at the southern end of Lake Michigan.

E. S. Miller.

The Detection of Carnauba Wax in Beeswax

(Continued from page 120)

Conclusions

The procedure which has been outlined is exceedingly simple and is highly dependable for the qualitative identification of carnauba wax in beeswax down to about 0.3 per cent as the lower limit of dependability. When every operation is strictly standardized the procedure is quantitative. The foregoing technique will not serve for the detection of paraffin, for the reason that paraffin is too readily soluble in normal butyl alcohol. When tallow is present in amounts of 10 per cent or greater, it may usually be identified by cooling the solution somewhat below room temperature, when tallow crystals begin to grow. Neither paraffin nor tallow in amounts up to 10 per cent obscure the presence of carnauba wax.

Acknowledgment

The author employs this opportunity to make grateful acknowledgment to his friend, Dr. P. C. Saunders, for the use of his private laboratory at Alfred University, in which most of these investigations in crystallography have been conducted.

Beekeepers and Almond Growers Pool Their Interests

(Continued from page 121)

mation they have already gathered. It is equally surprising to see the spirit of friendly cooperation revealed in this correspondence. Evidently the spirit of cooperation is abroad in the honey world.

The beekeepers who met the officers of the Exchange and inspected the factory and equipment were deeply impressed with the urgency of this unique opportunity. The feeling was unanimous that no such opportunity had ever been presented to beekeepers in this or any other state.

Honey buyers are already sensing the importance of this movement and are making efforts to tie up the honey producers and prevent them from joining the pool. Whether the individual producer enters the pool or not, it will be to his advantage not to commit himself before obtaining first-hand information in regard to the proposition that is offered by the Packing and Marketing Incorporation.

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Dr. Barnard Addresses the Eleventh Annual Meeting of American Farm Bureau Federation

On December 9, Dr. Barnard, president of the American Honey Institute, addressed the eleventh annual meeting of the American Farm Bureau Federation in Chicago. Dr. Barnard is also director of the White House Conference on Child Health and Protection, one of the important conferences instituted by President Hoover. We are proud of the fact that the president of the American Honey Institute is also the chief figure in this very important work.

Calcyanide Obtainable in Chicago

A letter from B. Towlen, of the Calcyanide Company of New York, announces that the Smithereen Company, 7417 Stony Island Avenue, Chicago, Illinois, are to be exclusive distributors for calcyanide in the State of Illinois. It is suggested that those in this territory interested in obtaining calcyanide for use in the apiary communicate directly with this company.

As most of our readers know, calcyanide is a new killing agent which is excellent when it is necessary for any reason to destroy colonies of bees. In destroying diseased colonies for burning or removal from the apiary, we have found it a decided help. A small amount of calcyanide on the end of a hive tool at the entrance of a colony practically insures the death of that colony in a short time, even without closing the entrance. The bees will die rather rapidly, and field bees coming in meet the same fate. It is easy then to remove the colony and take care of it at leisure.

Flight Experiments in Wyoming

In experiments at the Intermountain Bee Culture Laboratory, at Laramie, Wyoming, conducted by Dr. A. P. Sturtevant and E. H. Eckert to determine how far bees travel to gather nectar, it is reported that the bees went almost eight miles. Colonies of bees were placed in a series, extending a distance of eight miles, at three-quarter-mile intervals. Results showed that the bees, even in colonies seven and three-quarter miles, would return to the field to which they were accustomed, while those farther out would go in the opposite direction also to fields seven and three-quarter miles distant from their location.

Experiments also showed that the best results were where the colonies were about a mile and one-half from clover and alfalfa. This would indicate that it would be better to keep bees just outside the area in which they gather nectar, rather than right in the midst of it. G. P.



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"It WILL FREE THE SUPER OF BEES FASTER THAN ANY OTHER ESCAPE MADE."

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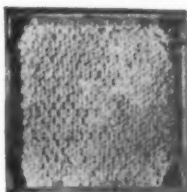
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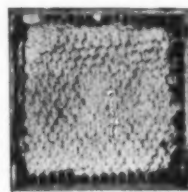


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